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TEXAS STATE JOURNAL OF MEDICINE

Volume 47 Number 10 Austin, Texas, October, 1951

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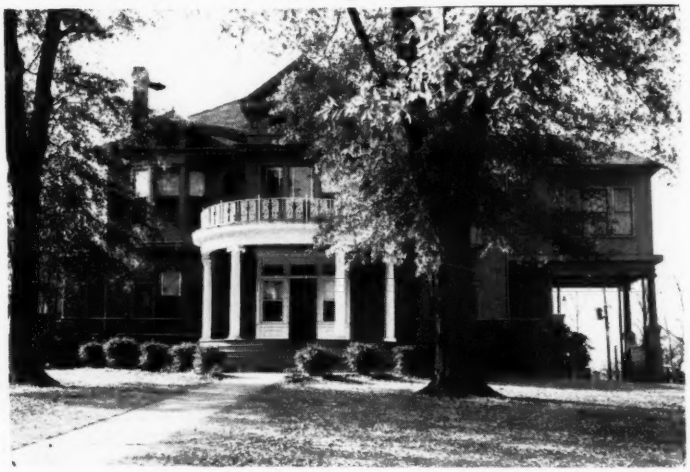

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Texas State Journal of Medicine is published monthly by the Texas Medical Association. Entered as Second Class Matter July 1, 1905, at the Post Office at Fort Worth, Texas, under act of March 3, 1879. Postmaster send all notices on Form 3579 to 700 Guadalupe Street, Austin, Texas.

President's Page

THE WOMAN'S AUXILIARY

Medical associations are the result of evolution. From a few scattered local societies the Texas Medical Association was organized. Its growth in numbers, power, and influence has kept pace with the amazing development of this great empire of the Southwest. From the doctor with his horse and saddlebags, then the horse-and-buggy doctor, and last the doctor and his car—each a symbol of his generation—we are familiar with the heroic past of medicine. In like manner, we can trace the development of medical societies up to the current day, to our Association with a membership exceeding 6,000.

The pioneer doctor did not blaze his path alone. In telling the tale of fortitude he displayed, we must not forget that there was one who shared the privations and the triumphs with him, his wife and helpmeet. She it was who looked after his creature comforts, preparing his food, superintending the household during his absence, collecting the messages that were to greet him on his return from distant calls. Always there was the light in the window, that pot of hot coffee on the stove, the happy smile of greeting.

These facts are mentioned only to emphasize one surprising circumstance: whereas the Texas Medical Association is almost one hundred years old, the proper place of the handmaidens of medicine was not recognized until just thirty-three years ago—one generation. In 1918 the Woman's Auxiliary to the Texas Medical Association was organized in Dallas, with Mrs. E. H. Cary the first president. At that late date the importance of women in medicine was recognized by the Texas Medical Association; the influence of doctors' wives was properly evaluated and due recognition was given to it.

Without doubt the past decade has been the most trying through which medicine has passed. Proud in the past for services well rendered, medicine looked aghast at onslaughts upon its way of life, its methods and manner of dispensing services. Faced by such threatening attacks, medicine was tried in the crucible of politics but not found

wanting. The results of 1950 elections, in which many of those who advocated socialized medicine were defeated decisively, were influenced by two important factors: one the united front of the medical profession, which took advantage of good public relations programs, adequate advertising, and active canvassing; the other the enormous contribution of the Woman's Auxiliary, which stood side by side with the medical associations in battling for American medicine. When the battle was over, a candid observer could but admit that it was the magnificent aid of the Woman's Auxiliary in this crucial campaign that turned the tide. The labor of phone-calling and doorbell-ringing was performed by members of the Auxiliary. In Florida and North Carolina, very doubtful states, the doctors say it was this persistent work up to the last hour that turned apparent defeat into victory.

The Texas Medical Association is proud of the Woman's Auxiliary. It is alert, informed, trained, prepared. Its efficiency and the scope of its activities were well demonstrated at the meeting of its Executive Board in Paris last month. Coming from that meeting one was convinced that the Woman's Auxiliary is in good hands.

It is sometimes asked, "What is the program of the Woman's Auxiliary?" Whoever asks that question does not comprehend the purpose of the Auxiliary. Its name is the answer; it is the *auxiliary* to the Texas Medical Association. Its program, its purpose, its very life is the Texas Medical Association. Perhaps we should say its program is to carry out the immediate task that confronts the Texas Medical Association at any certain time. An example is the recent gesture of the President, Mrs. O. W. Robinson, at the meeting of the Executive Council at Austin in offering to the Texas Medical Association $5,000 to be added to the building fund.

The Texas Medical Association tenders herewith its meed of praise and thanks to its loyal, hardworking partner. Ladies of the Auxiliary, we salute you!

Allen J. Stewart

TEXAS STATE JOURNAL OF MEDICINE

DEVOTED TO THE INTERESTS OF THE MEDICAL PROFESSION AND PUBLIC HEALTH IN TEXAS

Owned by the Texas Medical Association and issued monthly by the Board of Trustees

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Editorial Offices, 700 Guadalupe Street, Austin, Texas
Publication Offices, 1114 West Daggett Street, Fort Worth 1, Texas

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Volume 47 | **Austin, Texas, October, 1951** | **Number 10**

INTEREST IN POSTGRADUATE MEDICAL EDUCATION GROWS

That the Texas Medical Association has long been interested in postgraduate medical studies is a fact well known. However, at the recent annual session in Galveston more concrete evidence of that interest was offered in the decisions of the House of Delegates to create a Special Committee on Postgraduate Work and to underwrite to the extent of $2,500 each any possible deficits in staging postgraduate work at any one of three medical schools in Texas.

The duties of the Special Committee on Postgraduate Work are "to correlate and actively to support and sponsor, where mutually agreeable, all postgraduate medical education carried out in the state through any channel or sponsorship —through the Postgraduate School of Medicine of the University of Texas, the three medical colleges, the various postgraduate assemblies, and the State Health Department." Besides the members of the Committee on Medical Education and Hospitals, the special committee has three other members. Association money for the underwriting of deficits at the various medical schools is to be disbursed only upon recommendation of this committee, which shall have approved the estimated administrative and teaching costs of proposed postgraduate courses before they are staged.

The decision to participate more actively in the sponsoring of medical postgraduate studies was in accordance with the thinking of Association officials and many other medical leaders that federal funds, as channeled through the State Department of Health, for the support of administrative or teaching costs or as payment of money to individual physicians for personal expenses in attending these courses should be discontinued. It was realized, however, that sudden withdrawal of funds which had come to be relied upon might seriously impair postgraduate programs. Therefore, the underwriting of courses for a one year period was proposed to help "cushion" the blow of withdrawal of help from the Department of Health. At the end of the first year an evaluation of the program is planned to determine whether the amount of aid from the Association is sufficient, whether

it should be increased, or whether it has become superfluous.

The Special Committee on Postgraduate Work is responsible for an innovation in medical postgraduate work, being planned for the early part of 1952: the telephone broadcasts of panel discussions by medical authorities at times suitable for county medical society meetings. At least three such broadcasts will be made during January, February, and March. Preliminary information about the proposed broadcasts is presented in the News Section of this issue, and complete information about the individual broadcasts will be carried in the JOURNAL preceding each program.

The field of medical education is constantly changing. The Special Committee on Postgraduate Work expects to work hand in hand with medical educators to provide for Texas physicians the best possible facilities for postgraduate medical work.

BLOOD BANKS MODERN NECESSITY

The use of transfusions of blood and blood fractions to preserve life and health has become more and more a routine procedure in both civilian and military medical practice. Consequently the demands for blood, its collection, preservation, and distribution have developed into a real problem. Blood banks have sprung up everywhere, a National Association of Blood Banks has been created, the American Red Cross has developed a National Blood Bank Program, the American Medical Association has activated a Committee on Blood Banks, and within recent months the Texas Medical Association has established its own Committee on Blood Banks. The problem is being attacked from many points of view, and the very multiplicity of interested agencies has contributed to the confusion.

The National Association of Blood Banks was organized in November, 1947, and is designed to serve as a clearing house for blood banks. It helps to standardize efficient managerial and technical procedures and provides a channel for cooperative efforts and distribution of information.

The Red Cross gained experience in the collection and distribution of blood during World War II and, with the endorsement of interested government agencies and a number of nongovernmental agencies concerned with health, early in 1948 initiated a nationwide program to supplement the work of hospital and independent blood banks. Even before the end of World War II, the Red Cross had been approached with the idea that it obtain donors of blood for use in civilian emergencies, and the American Medical Association and the American Hospital Association agreed that local chapters might cooperate wtih state and local health departments and other qualified agencies in such a program. By 1947 it was evident that the "permissive program" was not effective in obtaining large quantities of blood, and the more aggressive campaign was instituted. Since that time, regional centers for collection and processing of blood have been set up, and mobile units visit smaller communities to procure donations.

With the flare-up of military activities in Korea in June, 1950, the necessity of an effective program of blood collection to meet the needs of the Department of Defense became critical, and Secretary of Defense Louis Johnson requested the American Red Cross to accept the responsibility of being "the official procurement agency for the needs of the armed forces as related to whole blood and blood derivatives." Shortly thereafter, recognizing that civil defense requires storage of large blood reserves, W. Stuart Symington, chairman of the National Security Resources Board, requested the Red Cross to be responsible for "coordinating a nation-wide civil defense blood program for recruitment of donors and collecting, storing, processing, and preparing for shipment of blood

and blood derivatives." The Red Cross in both instances agreed to act as requested.

From time to time policies of the Red Cross have conflicted with those of medical societies, particularly on local levels. Frequently difficulties have arisen because blood donations through the Red Cross are obtained with the understanding that no charge will be made for the blood when it is used, whereas hospital and other blood banks find it impossible to operate without charging a fee for the use of blood unless it is replaced in kind. Nevertheless, efforts nationally have been aimed at drawing up policies which are agreeable to the various interested agencies and which can be applied in local situations with minor revisions.

The most notable agreement, the "Boston Agreement"* was drawn up by the Committee on Blood and Blood Derivatives of the American National Red Cross, together with its Medical Advisory Committee on the National Blood Program, and representatives of the American Medical Association, American Hospital Association, and American Association of Blood Banks, meeting in Boston in July, 1950. Generally speaking, this agreement provided for cooperation among the agencies represented in time of emergency and in peacetime, blood to be exchanged on a unit-for-unit basis among the various blood banks and to be used whenever and wherever it is needed to serve the best interests of the community. This agreement was approved by the House of Delegates of the American Medical Association in December, 1950.

In practice, the terms of the Boston Agreement have been difficult to follow in certain local situations, and relations between the Red Cross, county medical societies, hospitals, and officials of blood banks already existing or contemplated in more than one instance have been badly strained.

The fact remains that the collection of blood in large quantities and the establishment of channels through which blood and blood derivatives can be made available to the armed forces and to civilians when and where needed is of grave importance. The mere knowledge that the Department of Defense credits the increased use of blood and blood plasma with a startling reduction of the mortality rate in warfare (8 to 11 men per 100 who reached the forward surgical hospitals died during World War I; only 2.6 per 100 during the Korean conflict) should be sufficient reason for the medical profession and others alike to insist that nothing stand in the way of an effective blood program.

Stumbling blocks which seem insurmountable to the dogmatic, preconditioned mind can be remolded into the foundations of an effective, voluntarily achieved blood program, useful in the front lines of war, in the chaos of national disaster, or in the cruel emergencies of peace, provided that cool heads, warm hearts, and a sense of urgent necessity for cooperation prevail.

*This agreement is published in full in the News Section.

DIABETES DETECTION DRIVE

The fourth annual campaign to further the detection of diabetes and to disseminate general information about the disease will get under way when the American Diabetes Association sponsors its nationwide detection drive during Diabetes Week, November 11-17.

Eighth among the leading causes of death by disease in the United States, diabetes was for many years a common and often a fatal disease. Even though the cause still is unknown, a great deal about diabetes has been determined, and today the diabetic patient leads an almost normal life.

In spite of the progress in the control of diabetes during recent years, the disease remains a great problem because an estimated one million persons in the United States are unaware that they have diabetes. If symptoms are not acute, many persons do not seek a physician's

help until the case is severe. As a result of the 1950 campaign in which physicians, health agencies, press, and radio speakers presented to the public the need for early discovery and treatment of diabetes, between .5 and 1 per cent of the total number of persons tested proved to be newly-discovered cases.

Taking part in the Diabetes Detection Drive will be approximately twenty-five Texas county societies out of a total of more than five hundred societies in the United States. To aid the diabetes detection program in those counties and elsewhere, each physician is urged to test all his patients routinely, to check members of his family and himself, and to offer his services to a committee on diabetes of his medical society or an affiliate unit of the American Diabetes Association if such units exist in his area.

ASSOCIATION EXECUTIVES DIRECT EXPANDING PROGRAM

The positions of trust, ministration, and authority held by officers of the Texas Medical Association have increased in importance in recent years with the complex problems of modern medicine. Likewise, projects distinctive to the Association in this state such as its current building program, new postgraduate courses in medicine, and education of physicians in methods of good public relations make the officers' responsibilities of even more consequence today than before.

It is significant of the progress of the Texas Medical Association that the executive branch has changed in appearance in the past four years. This change has evolved with the provision for one instead of three vice-presidents and the establishment of the office of Speaker of the House of Delegates in 1948; the employment by the Board of Trustees in 1950 of an Executive Secretary; and, as the result of a proposed amendment at the last annual session, the election of a Vice-Speaker-Elect of the House of Delegates.

A view of the duties of the Association's officers as stated in the Constitution reflects the interests and power of the organization as vested in its officers.

Like the executive of similar groups, the President of the Association represents the membership as "the real head of the medical profession of the state during his term." Significant of his responsibilities are the verbs used in the description of his duties in the Constitution—"preside," "address," "appoint," "cooperate," and "coordinate."

To assist the President in executing his duties and to perform any service required by the President are the duties of the President-Elect and the Vice-President. Both serve in the House of Delegates and on the Executive Council. Familiarizing himself with all the actions of the President is important for the President-Elect, who automatically assumes the presidency the following year. The President-Elect also has the power to nominate members of the various councils and appoint members of the standing committees to serve during his term as President. The Vice-President must be ready to perform the duties of the President whenever he is unable to serve.

The Secretary is responsible for seeing that recordings of the proceedings of the House of Delegates and general meetings are made and for assisting standing committees to keep adequate records. In his capacity he signs the official papers of the Association. Many duties with which the Secretary previously was burdened have been transferred to the Executive Secretary of the Association. Among the things for which he is responsible are receiving and making record in the Central Office of moneys and properties coming into the possession of the Association, expending funds under direction of the Trustees, assisting with preparation of the program and attending to details about accommodations and registration for annual sessions, carrying on correspondence under the

direction of the officers of the Association, and helping the Secretary to maintain permanent records of the activities of the Association.

Serving for three years, the Treasurer is custodian of all moneys, deeds, securities, and properties of the Association. He must give to the Board of Trustees a suitable bond for performance of his duty. Like most of the other officers, the Treasurer is a member of the Executive Council, the House of Delegates, and the War Council.

Presiding at all meetings of the House of Delegates is the duty of the Speaker of the House. The Speaker conforms with parliamentary law and customs to expedite the Association's business and keep the meetings moving at a steady pace.

Not yet officially recognized as an officer of the Association, a Vice-Speaker of the House of Delegates was proposed at the 1951 annual session. Although the amendment providing for this officer cannot be adopted until the next annual session, the House of Delegates proceeded with election of a Vice-Speaker-Elect so that the officer will be prepared to serve if the amendment is adopted in 1952.

Completing the round-up of officers of the Association are the Trustees and Councilors, likewise important to the organization set-up and administration. Specific duties of these boards have been outlined in articles in the March and September, 1951, issues of the JOURNAL. Further information about the men who currently hold Association offices appears in the Organization Section of this issue.

DALLAS WELCOMES SOUTHERN MEDICAL ASSOCIATION

With Dallas as the setting for the annual meeting of the Southern Medical Association from November 5 to 8, the strong relationship of that body to the Texas Medical Association, individually and collectively, is reemphasized.

Dallas doctors who will be in charge of arrangements for the session are those who have been outstandingly active in the Texas organization. These include the president of the Southern Medical Association, Dr. Curtice Rosser; the Councilor for Texas, Dr. Milford O. Rouse; the president of the Dallas County Medical Society, Dr. Charles L. Martin; and the general chairman for the meeting, Dr. Frank A. Selecman. Not to be outdone in honors, the distaff side of the Southern medical organization, the Woman's Auxiliary to the Southern Medical Association, boasts as its president Mrs. L. S. Thompson of Dallas.

Most of the activities of the convention will center in the Adolphus and Baker Hotels, just across the street from each other. Officials have asked Texas physicians to use the motels, when possible, to leave the downtown hotels available for out-of-state physicians who may not have their automobiles.

A preview of the four-day program appears in the News Section of this JOURNAL. With the Association and Auxiliary functions which are planned, out-of-state guests may be assured of a warm and profitable Texas reception.

CURRENT EDITORIAL COMMENT

COMMUNITY RESPONSIBILITY FOR MEDICAL CARE

Physicians traditionally have been concerned primarily with the scientific development of medicine and medical education. Recently, however, they have been directing more attention to the proper relationship of medicine to society. The American Medical Association, state medical associations, and local medical societies, rec-

This department of the JOURNAL *presents editorial comments on current items pertaining to the science, art, and practice of medicine, contributed by members of the Texas Medical Association and scientists closely associated with the medical profession of Texas. Invitation is hereby extended to any member of the Texas Medical Association to submit such discussions for this department. The discussions should not be more than 500 words in length.*

ognizing the desirability of this trend, have been encouraging physicians to participate in community planning as members of the more than 1,200 local health councils or health committees and thirty statewide health councils now in operation.

In many instances needed community projects have been developed by a few leaders who have been able to prove to the community that such projects were worth while and could be financially maintained. In this manner, every community can help secure adequate medical care as it has provided itself with schools, churches, roads, and other desirable facilities. The public must be reminded, however, that neither doctors nor government can parcel post medical care from Washington or Austin any more than they can deliver good churches, schools, chambers of commerce, or service clubs. Physicians must assert their leadership in educating their communities to this point of view.

The Committee on Indigent Medical Care of the Council on Medical Service of the American Medical Association has undertaken a survey of the general status of medical care programs for the indigent and medically indigent in the United States. Questionnaires sent to state medical associations and 125 local medical societies reveal that in thirty-one states the medical care of the indigent is a county, municipality, or township responsibility and that fourteen states have statewide programs. The survey thus far indicates that well defined medical care programs for the indigent and medically indigent are few. State governments generally limit their efforts in this field to defining indigency, to authorizing local governmental units to care for the indigent, and to participating in the care of special public assistance groups. Despite the increased emphasis on so-called social security, the free services of family physicians and of hospital staff members are still the principal source of medical care for these groups.

There are four economic groups to be considered:

1. The self-sufficient—those who are able financially to care for themselves under any conditions, no matter how prolonged or costly the illness.
2. The usually self-sufficient—those who are able financially to care for themselves except during prolonged or costly illness.
3. The medically indigent—those who can provide food, clothing, and shelter under ordinary circumstances but find it difficult to meet the cost of any illness.
4. The indigent—those who are dependent on public welfare for housing, clothing, food, and medical care.

It is with the latter two groups that we are most concerned.

Organized society must accept the responsibility of providing the indigent with medical care. If the needs of this group are not adequately met, it is the fault of society, not exclusively of the medical profession. The medical care of a large portion of this group is already given without cost by the medical profession. In Texas indigent medical care is carried on largely by private practitioners with little or often no assistance from governmental agencies or voluntary community agencies. In many instances the local physician must provide hospitalization as well as his own services.

A recent survey of 210 Texas counties reveals that the Commissioners' Courts will authorize and pay for hospitalization for indigent patients in 162 counties, 33 of which qualify or limit payments, and 48 assume no obligation for this group. A few pay some fee to the hospitals, which often is actually below the hospitals' costs.

Because the action which brings changes in medical practice requires legislative enactment, practitioners of medicine as individuals must participate actively in politics. The physician must see that his patients and community are informed on basic problems and recognize that the socialization of medicine is only one of the trends toward socialization and the welfare state.

They should realize too that full support of educational, health, and welfare institutions is the surest way to keep them out of federal grasp.

The influence of the physician upon the public in his own community is enhanced by his interest and participation in community projects. Although he is a physician, he also is a citizen with the rights, obligations, and responsibilities of a citizen, and those rights, obligations, and responsibilities should be exercised.

EVERETT C. FOX, M. D., Chairman,
Council on Medical Economics,
Texas Medical Association,
Dallas, Texas.

Medical Arts Building.

ORIGINAL ARTICLES

DIAGNOSIS OF INTRACRANIAL TUMORS

WILLIAM W. McKINNEY, M.D., Fort Worth, Texas

IN considering a diagnosis of intracranial tumors, two questions must be kept in mind constantly. Has the patient a brain tumor or some other intracranial lesion which simulates tumor? If a tumor is present, where is it situated and what pathologic type is it?

With present neurologic knowledge and diagnostic methods, the first of these questions can be answered in practically every case, provided the patient consents to thorough diagnostic measures. Likewise, it is possible usually to locate the tumor exactly, but the nature of the lesion, predictable in a large and ever increasing percentage of cases, often cannot be determined prior to operation.

Table 1 lists the frequency of tumors in various locations. Table 2 shows the incidence of various types of intracranial tumors.

DIAGNOSIS

When a brain tumor is suspected, the seven steps by which a physician would arrive at a diagnosis are as follows: (1) careful detailed history, (2) general physical and neurologic examination, (3) roentgenogram of skull and chest, (4) visual field and funduscopic examinations, (5) caloric and audiometric tests when indicated, (6) spinal puncture, and (7) other special diagnostic procedures.

The commonest complaints in the histories of patients with intracranial tumors include: (1) headaches, (2) disturbances in vision (such as blurring of vision or double vision), (3) nausea and vomiting, (4) personality changes, (5) seizures, (6) unsteadiness, and (7) weakness of limbs.

Although headache is the commonest complaint, it is not necessarily an early symptom. There are many causes of headaches and these should be ruled out before a brain tumor is considered. Headaches due to intracranial lesions are the result of either increased intracranial pressure or irritation of the meninges.

Disturbances in vision can be divided into two groups: those due to intracranial pressure, which result in blurring of vision and double vision; and visual field defects, which are due to pressure on the optic nerve, the optic chiasm, or the visual pathways. Tumors of the optic nerve, pituitary tumors, tumors in the region of the optic chiasm, and tumors in the temporal and occipital lobes fall in the latter category.

Nausea and vomiting are usually the result of increased intracranial pressure, or of irritation of the vestibular nerves or the cerebellar centers.

Personality changes are evident in persons having any type of brain tumor, although they are most common in persons with frontal lobe tumors. These patients become forgetful, untidy, and lose all sense of responsibility and initiative.

Convulsive seizures, particularly when they involve one side of the body or one extremity or when the patient has a weakness on one side after the convulsion, are suggestive of a brain tumor. Any patient over the age of 30 years who has a convulsive seizure should be suspected of having a brain tumor. Convulsions may be the first sign of a brain tumor.

A jeweler who had been carrying on his business satisfactorily and doing watch repairing had a convulsive seizure involving his left side. A large tumor of the right frontal lobe was found at operation. This tumor was in a silent area and had produced no symptoms prior to convulsion.

Unsteadiness is a common symptom, particularly in cerebellar tumors and often in frontal and temporal lobe tumors.

Weakness of one or both extremities on one side of the body is usually the result of a tumor involving the frontal lobe and causing pressure on the precentral cortex or parts of the internal capsule.

Read before the Section on General Practice, Texas Medical Association, Annual Session, Galveston, May 1, 1951.

The second step in the examination of a tumor suspect consists of a general physical and a careful neurologic examination. The commonest physical findings on neurologic examination are (1) papilledema, (2) reflex changes, (3) weakness of muscles enervated by cranial nerves, (4) weakness of extremities, (5) disturbances in coordination, (6) speech disturbances, (7) visual field defects, and (8) intellectual defects.

Making a roentgenograph of the skull and chest is the third step. I include the chest because often it is possible to pick up lesions which have metastasized from brain tumors and occasionally a primary tumor in the lungs which commonly metastasizes to the brain. Various figures from 40 to 70 per cent have been given as to the percentage of brain tumors that can be diagnosed from radiologic films. In any event, they are a great aid in the diagnosis of brain tumors.

TABLE 1.—*Frequency of Tumors in Various Locations.**

Supratentorial—70%			
Frontal lobe	16.8	Pituitary gland	2.7
Temporal lobe	13.6	Corpus callosum	11.8
Parietal lobe	11.8	Midbrain	0.9
Occipital lobe	2.7	Third ventricle	1.3
Anterior fossa	5.5	Multiple	2.3
Infratentorial—30%			
Cerebellum	12.7	Fourth ventricle	6.8
Cerebello-pontine angle	10.4		

*After Bucy, P. C.: Intracranial Tumors, in Grinker, R. R.: Neurology, ed. 3, Springfield, Ill., Charles C. Thomas, 1943, p. 522.

Visual field and funduscopic examinations are the next step in diagnosis. Funduscopic examinations should be done always and should be included in a neurologic and general physical examination.

Caloric and audiometric tests should be done when there is any suggestion of an eighth nerve tumor or a cerebellopontile angle tumor. In an eighth nerve tumor, the vestibular portion of the eighth nerve is knocked out early. Later the cochlea, or hearing part of the eighth nerve, succumbs to pressure. Therefore, these tests are essential in the diagnosis.

Spinal puncture is a controversial test; however, I believe that if a spinal puncture is done carefully, it is not too great a risk. In removing the stylet from the needle, the physician should remove it only partially so that if there is marked increased intracranial pressure, there is not a rapid loss of spinal fluid. The first few drops of spinal fluid do the most harm when there is increased intracranial pressure. The great danger of the spinal puncture is to have a sudden release of spinal fluid with the resulting herniation of the cerebellar tonsils through the foramen magnum, or the tip of the temporal lobe through the tentorium, both of which may result in death. After the spinal needle is properly inserted, a manometer should be used to measure the pressure. A water manometer is preferable because the readings are more accurate.

A Queckenstedt test is inadvisable when a patient has increased intracranial pressure. A Queckenstedt test only increases the intracranial pressure and serves no purpose in the diagnosis of a brain tumor. There are just two indications for a Queckenstedt determination: (1) in cases in which a lateral sinus thrombosis is suspected and (2) in cases in which a spinal cord tumor or block is suspected.

If the spinal fluid pressure is not more than 200 mm., a specimen of approximately 7 cc. should be removed. Following removal of this specimen, a final pressure reading should be made. The spinal fluid should then be analyzed from the standpoint of cell count, total protein content, sugar determination, Wassermann reaction, and colloidal gold reaction. An increased cell count in the spinal fluid is not always indicative of an inflammatory process. It is not uncommon to find a cell count as high as 400 to 500 per cubic millimeter in tumors adjacent to the ventricles or surface of the brain. Many brain tumors have been missed and in some instances, a diagnosis of inflammatory disease has been made when such a cell count was found.

TABLE 2.—*Frequency of Types of Intracranial Tumors.**

Type		Frequency (%)
Gliomas		42.6
Astrocytomas	12.6	
Glioblastomas	10.3	
Medulloblastomas	4.3	
Mixed	15.4	
Pituitary Adenomas		17.8
Chromophobic	13.1	
Chromophilic	3.6	
Mixed	1.1	
Meningiomas		13.4
Acoustic neurinomas		8.7
Congenital tumors		5.6
Metastatic tumors		4.2
Granulomas		2.2
Blood vessel tumors		2.0
Miscellaneous		3.5

*Modified from Bucy, P. C.: Intracranial Tumors, in Grinker, R. R.: Neurology, ed. 3, Springfield, Ill., Charles C. Thomas, 1943, p. 553.

Additional studies to confirm the diagnosis of brain tumors can include pneumo-encephalography, electroencephalography, and anteriography. These procedures are usually carried out just prior to operation.

With the physical findings and the diagnostic aids mentioned, practically all tumors can be diagnosed in a reasonably early stage by a physician in the general practice of medicine.

PROGNOSIS

Although the frequency and importance of brain tumors has been recognized generally in recent years, many members of the medical profession still regard brain tumors as rarities and consider them to be therapeutically hopeless. These theories are regrettable today when the operative mortality in cases of brain tumor has been reduced to from 10 to 15 per cent, and a large percentage of the patients can be benefited by appropriate treatment.

In 400 consecutive cases operated on by Dr. Horrax, the tumor was completely removed in 224. Twenty-seven patients died after operation and 10 died later, leaving 187 patients from whom a tumor is believed to have been eradicated wholly. Of the entire 224 patients, 160, or 71 per cent, are leading useful lives with little loss of function.

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1. Bucy, P. C.: Intracranial Tumors, in Grinker, R. R.: Neurology, ed. 3, Springfield, Ill., Charles C. Thomas, 1943, pp. 522, 553.
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1705 Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. CON D. HAMILTON, Cleburne: For physicians in general practice, the diagnosis of brain tumor is difficult. With the possible exception of papilledema, there are really no classical signs of brain tumor. However, a syndrome which is characterized by slowly progressing headache, occasional vomiting, mental dullness, and some focal sign such as reflex changes, speech disturbance, or limb or muscular weakness should arouse suspicion.

Because these signs and symptoms are more or less obscure early, a detailed history and physical examination are essential for diagnosis. Since many physicians are too busy to take the time required for these two steps, diagnosis at times is delayed unnecessarily. Family doctors, however, are sometimes able to spot changes in personality before they become apparent to the patient or other members of the family and to suspect that something is wrong. If a funduscopic examination is made, the physician occasionally will diagnose a brain tumor early in its course; however, papilledema may be a late sign. Once the physician suspects that there may be a tumor, he should make roentgenograms of the chest and skull. Accurate interpretation of skull roentgenograms, however, requires expert knowledge if early significant changes are recognized. Spinal puncture is a useful aid to diagnosis except in patients with choked disks. It is best if the caloric and audiometric tests, as well as other special diagnostic procedures, are made and interpreted by a consultant.

Those illnesses which simulate brain tumor are principally circumscribed syphilitic or tuberculous meningitis, multiple sclerosis, acute or subacute encephalitis, abscess, and progressive softening of the brain due to vascular disease. On the other hand, softening of the brain due to vascular disease and multiple sclerosis especially may be simulated by brain tumor. In many instances it is the duty of the general practitioner to urge his patients to consent to thorough diagnostic measures in the hands of an experienced neurosurgeon for accurate diagnosis of these lesions.

VASCULAR LESIONS OF INTRACRANIAL CAVITY

Surgical Treatment

ALBERT D'ERRICO, M.D., Dallas, Texas

MANY vascular lesions of the brain, chiefly aneurysms and angiomas, have become increasingly important from the standpoint of surgical treatment. These two lesions constitute the most common causes of spontaneous subarachnoid hemorrhage; therefore, the positive diagnosis of such bleeding is of first importance and should initiate a definite plan of attack.

Ordinarily, the diagnosis of subarachnoid hemorrhage is easily made during the acute stage. The outstanding symptom is sudden severe headache usually at the top of the head, which almost always is associated with giddiness or even faintness. Frequently, these symptoms immediately follow stooping or straining. Pain and stiffness in the back of the neck are delayed major symptoms, usually appearing on the second or third day. Photophobia and body paresthesias are relatively minor but common symptoms.

Naturally, the demonstration of blood in the cerebrospinal fluid is necessary for a positive diagnosis, but great care must be taken in its evaluation, since bleeding may be initiated by the spinal puncture needle itself. Blood from this latter source will decrease in amount with successive specimens of fluid, whereas with spontaneous hemorrhage already existing in the subarachnoid space, all specimens will contain the same amount. At times a puncture will show blood freely mixed with the fluid because of a puncture done shortly before, but after several days such bleeding practically always disappears. The presence of blood after this interval should be considered significant.

In considering surgical treatment rather than conservative management, the inherent danger of the untreated lesion must be appreciated. From spontaneous subarachnoid hemorrhage alone, about one-third of patients die within three weeks of the onset, another third within three years, and a large percentage of the remainder die in later life as a result of the underlying lesion. On the other hand, with surgery the mortality and morbidity is not great and cures can be effected in about one-half of these patients.

ETIOLOGY AND TREATMENT

A ruptured aneurysm is the most common cause of spontaneous subarachnoid hemorrhage. It is usually found intracranially, proximal to the bifurcation of the carotid artery. Although subarachnoid hemorrhage may occur from an aneurysm in the cavernous sinus,

Read before the Section on Surgery, Texas Medical Association, Annual Session, Galveston, May 1, 1951.

this is rarely the case; only comparatively few are found in the terminal branches of the carotid tree.

Aneurysms within the cavernous sinus are ordinarily arteriovenous and have a characteristic bruit heard best over the eyeball or temporal region on the affected side. The bruit is seldom, if ever, heard in cases of simple aneurysm in this location. Typical observations with arteriovenous aneurysms are proptosis, dilatation of the periorbital veins, and injection of the conjunctiva. Examination of the eye grounds may show an arterial pulsation of the retinal veins, which are brighter red than normal. Additional symptoms are those of a simple aneurysm in the cavernous sinus, namely, pain in the forehead from impingement on the first division of the trigeminal nerve, ophthalmoplegia, ptosis, and dilatation of the pupil resulting from involvement of the third, fourth, and sixth nerves as they course through the sinus.

Roentgen examination frequently demonstrates erosion of the superior orbital fissure or even of the adjacent anterior clinoid process. At times the aneurysm may encroach on the optic canal, producing unilateral primary optic atrophy and impairment of vision, with or without a defect in the visual field. Angiography shows a characteristic picture with little if any filling of the carotid artery beyond the cavernous sinus but with good filling of the jugular vein from the cavernous sinus down.

The most common location of an intracranial aneurysm is in the region just proximal to the carotid bifurcation. Lesions in this location have many symptoms in common with aneurysms in the cavernous sinus, such as pain in the ipsilateral side of the forehead and impairment of the third nerve, with ptosis, dilatation of the pupil, and weakness of the extraocular muscles. The second most common location is in the region of the proximal portion of the anterior cerebral arteries and the anterior communicating artery. Aneurysms of the middle cerebral, posterior cerebral, and posterior communicating arteries are comparatively rare. Vertebral artery aneurysms are relatively uncommon but are important since they may involve the third nerve and simulate an aneurysm of the internal carotid artery.

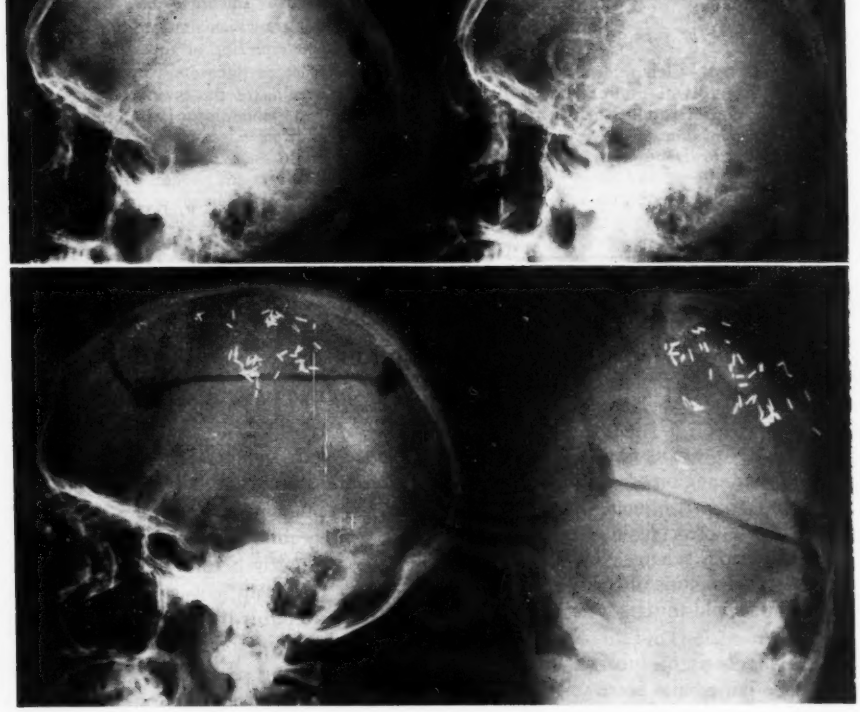

FIG. 1. Angioma of the cerebrum. The illustrations above show two phases of filling during the same thorotrast injection. The illustrations below are postoperative views showing silver clips indicating the extent of the lesion in lateral and anteroposterior views.

Localization from the neurologic observations alone is seldom sufficient, and angiography should be employed to further the diagnosis. The danger of angiography in the acute stage is still debatable, but it has become increasingly apparent that prolonged delay of surgery is more dangerous than prompt intervention. By waiting until the cerebrospinal fluid is xanthochromic, most of the acute danger is averted since bleeding has presumably stopped by this time. At times, particularly with clotting, the aneurysm

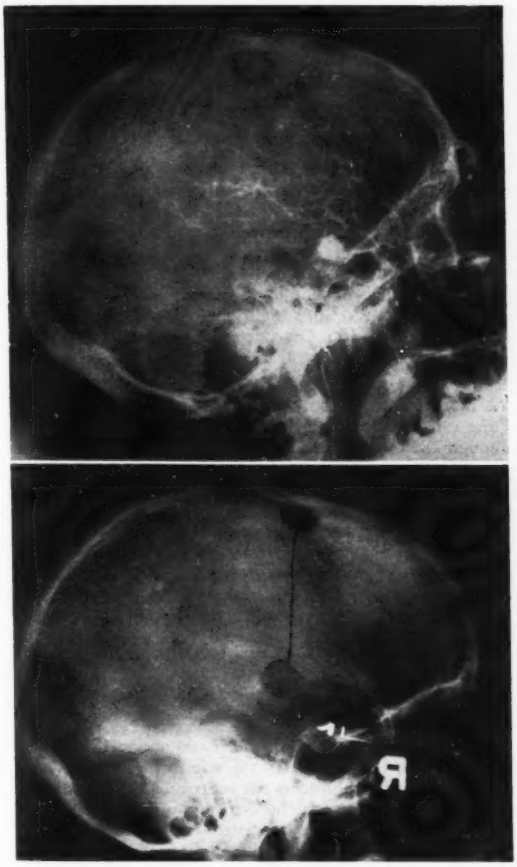

FIG. 2. Aneurysm of the internal carotid artery is shown in the illustration above. A postoperative film below shows tantalum clips on either side of the pedicle of the sac.

does not show with angiography, and when this occurs there is often a lack of filling and sometimes a displacement of the involved artery.

Intracerebral angiomas are the second most common cause of spontaneous subarachnoid bleeding and, as with the aneurysms, the necessity of early diagnosis and treatment must be recognized. The angiomas are actually arteriovenous anomalies but may show a slow progressive extension or growth. Surgical treatment short of removal is of no real help and ligation of the carotid artery is even contraindicated, since the circulation is already impaired. This impairment results from the pumping of arterial blood into the veins and spurting of bright red blood into an enlarged venous channel may be clearly visible at operation. When the final arterial connection is clipped, the entire venous network suddenly loses its partially arterialized appearance and assumes the normal venous color. After resection even of a large vascular network, the circulation is actually improved. The lesions extend more deeply than the surface picture would suggest and often they penetrate to or may even be found within the ventricle (fig. 1). Although the resection

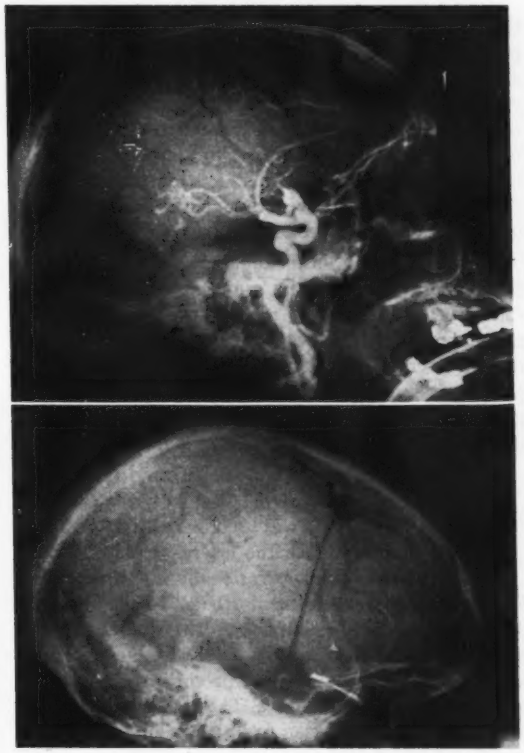

FIG. 3. Aneurysm with calcified wall. In the upper film the thorotrast can be seen in the pedicle of the aneurysm. Below is a postoperative view showing a large tantalum clip on the pedicle of the sac.

of these lesions may be dangerous, the mortality is far less than with expectant waiting. The disability, although often great immediately after surgery, is generally small after a period of months. Comparatively few of these angiomas are too extensive or too poorly situated to permit removal.

Ligation of the internal carotid artery is often necessary in the treatment of aneurysms. This procedure may be either a preliminary step of surgical treatment or all that can be done. Under local anesthesia

ligation is first tested for thirty minutes and if it is tolerated, the artery is tied with a rubber dam ligature. If there is a delayed reaction, the ligature is released; otherwise the carotid crotch is excised after a period of about two weeks. If at the first stage the patient does not tolerate occlusion of the internal carotid artery, ligation of the common carotid artery should be tried. Rarely, even ligation of the common carotid artery is not tolerated; in this event, a large tantalum clip is applied and the artery is occluded in stages. After complete occlusion of the common carotid artery is effected, three weeks is allowed to elapse before the internal carotid is finally tied.

A few aneurysms are best treated by carotid ligation in the neck alone and others by combining this procedure with intracranial clipping, trapping the aneurysm between the two levels of occlusion, or by placing clips on either side of the pedicle. Even though the carotid artery has already been occluded in the neck, sufficient time must be allowed before clipping it intracranially. Without this waiting period serious disability may ensue even though previous occlusion in the neck was well tolerated.

Resection of an intracranial aneurysm is neither feasible nor safe, and the same or a better purpose can be accomplished by placing clips judiciously to shunt the circulation from the aneurysm and still not impair essential blood flow. At times a clip can be placed across the pedicle to advantage, particularly in instances in which occlusion of the artery from which the aneurysm arises would result in major disability.

The kind of clip used and the method of application are extremely important. Originally the standard silver neurosurgical clip was used, but this was seldom large enough to embrace the artery. In addition the fine caliber wire would occasionally cut the arterial wall, resulting in serious hemorrhage. I have observed that tantalum clips handmade to the desired dimension from .0125 inch stock with their edges carefully smoothed on a stone to prevent cutting the arterial wall are much more effective. These are easily applied with a sucker tip and clamped with a long, curved or straight Adson hemostat (fig. 2 and 3).

PRESENT STUDIES

In this series are 45 cases of proved aneurysms. Nine were arteriovenous aneurysms in the cavernous sinus and 19 were in the intracranial portion of the carotid artery proximal to the bifurcation. There were 2 off the middle cerebral and 8 off the anterior cerebral arteries. Four arose from the anterior communicating artery and one each from the posterior cerebral and vertebral arteries. One was of undetermined origin.

An intracranial clipping was done in 18 cases, and most of these were combined with a ligation of the carotid artery in the neck. This includes 5 cases of arteriovenous aneurysm in the cavernous sinus, and in all of these occlusion of the carotid artery was done in the neck as well as intracranially. There was 1 operative death in this latter group from an accidental air embolus. Carotid ligation in the neck alone was done in 17 cases, and there was 1 death in this group. No ligation was done in 10 cases; a ruptured aneurysm of a vertebral artery caused death in 1 of these.

While the prognosis of these cases was formerly hopeless, the general prognosis is now good. With proper management cures can be effected in the majority, and with the exercise of proper care there is little attendant disability.

Medical Arts Building.

ABSTRACT OF DISCUSSION

DR. GEORGE EHNI, Houston: Dr. D'Errico has outlined the diagnostic criteria for certain vascular lesions in the cranial cavity, given a step by step description of his operative attack, and shown the splendid results he has obtained in a wide variety of disturbances which, until not many years ago, were considered inoperable. His results in 35 patients operated upon, with but 2 deaths and one of these from air embolism, stands high among the various surgical series reported to date. Of course, in such series the 30 to 50 per cent of patients who die with initial hemorrhage do not show up.

A mortality rate of only 5.8 per cent for simple ligations of the carotid artery, which must cover a number of years although Dr. D'Errico did not state the durations of survival, is gratifying when one considers that without operation about 30 per cent of patients with these lesions die of second hemorrhages in from three weeks to three years. Dr. D'Errico has been fortunate in not having a patient die from a second hemorrhage during work-up before surgery could be undertaken. He also was fortunate to find so many aneurysms situated where they were favorable for trapping. In Hyland and Richardson's series, for example, most of the lesions were on the anterior cerebral, anterior communicating, and middle cerebral arteries with only 2 on the carotid artery before bifurcation. These locations vary from series to series, depending upon whether the series reports surgery or necropsy, and on other factors.

A cause of subarachnoid hemorrhage not mentioned by Dr. D'Errico is hemorrhage in the arteriosclerotic or hypertensive patient which breaches the ventricular wall. The diagnosis in these patients can be difficult to distinguish from aneurysmal ruptures with associated intracerebral clot, especially if no history of previous subarachnoid bleeding, unilateral head pain, or cranial nerve palsies can be obtained. It is my belief that hemorrhage from this source is more common than from angiomas.

In spinal puncture, although bleeding from needle trauma must be kept in mind, one usually errs in assuming the blood to result from this cause instead of from spontaneous bleeding if the quantity is great. Traumatic blood will quickly clear as fluid is let out. If the concentration of blood is great and it seems the needle may be in a meningorachidian vein, it is helpful to connect the manometer and make periodic readings during the removal of fluid. If the needle is in a vein, the blood in the manometer will usually clot before 10 cc. is removed, and up to the time of clotting, the pressure, which is the pressure in the vein, will remain constant.

If the needle is in bloody subarachnoid fluid, clotting will not occur and a progressive drop in pressure will occur as fluid is withdrawn. If doubt still exists, the desirability of immediate diagnosis is so great that a needle should be placed at a higher level and similar observations made there.

Since so many patients who survive initial bleeding rebleed within the second week, I would favor earlier arteriography than is Dr. D'Errico's custom. It does not seem that the clot occluding the hole in the aneurysm is any stronger after two weeks than it is an hour or a day after bleeding. In injecting the contrast material, it must be remembered that the injection enters a tube open at both ends to receive the blood from below and to discharge it above. No matter what the speed of injection, the added volume cannot significantly raise the pressure distally as long as the carotid artery is open to the heart, since even a very fast injection would only reverse the flow for an instant.

Angiographic studies are of extreme importance in these lesions, since the choice of procedures available depends wholly on the exact position of the aneurysm; what is applicable for one location is not for another. Angiography is also important to show the state of collateral circulation through the circle of Willis; for this reason many are now doing complete angiography, or at least of both carotid arteries, prior to operation to know more exactly the capabilities of the various vessels expected to carry the blood after ligature.

If I understand Dr. D'Errico correctly, he totally ligates the internal carotid artery and after two weeks excises the carotid bifurcation. It is not clear to me what result this second operation is expected to have. I would be fearful of reentering the neck within a month after internal carotid ligation because this procedure is contrary to established principles of vessel ligation, leaving as it does a long blind sac in which thrombosis occurs and from which embolism is possible.

DR. D'ERRICO, closing: In answer to Dr. Ehni, the survival period included all cases from the first in 1944 until the last, just completed during the past month.

The carotid bifurcation was excised after the development of a bruit in the neck at the site of the ligation in the seventh and eighth cases. The bruit disappeared in both of these after excision. Thus far, no untoward effects have followed this procedure.

MANAGEMENT OF SPONTANEOUS SUBARACHNOID HEMORRHAGE DUE TO INTRACRANIAL ANEURYSMS

IRA J. JACKSON, M.D., and Y. C. SMITH, JR., M.D.,
Galveston, Texas

THE management of spontaneous subarachnoid hemorrhage in recent years has become one of direct surgical attack rather than of expectant waiting. The transference of this clinical entity from the field of medicine to surgery has been caused by the recognition that a ruptured aneurysm usually is the etiologic agent.[20] Intracranial aneurysms once were thought to be hopeless and the treatment advocated was to let nature take its course. However, recent years have brought forth increased clinical acumen, advanced diagnostic procedures, and refined neurosurgical techniques so that these once hopeless abnormalities now can be surgically cared for.

PATHOLOGY

A ruptured intracranial aneurysm is stated to be the etiologic factor in at least 90 per cent of patients with primary or spontaneous subarachnoid hemorrhage. The great majority of these aneurysms are congenital in origin and a small number of the saccular aneurysms are arteriosclerotic.[4, 8, 10, 11, 20, 21] Some spontaneous subarachnoid hemorrhages result merely from primary rupture of a vessel without evidence of aneurysmal formation. Arteriovenous aneurysms are more frequently recognized as an etiologic agent because of the common practice of arteriography. Among the rarer causes are blood dyscrasias, toxemias, hypertension, intracranial angiomas, and neoplasms. Our discussion will be concerned only with saccular intracranial aneurysms.

Subarachnoid hemorrhage has been reported to occur as early as 6 days of life[13] and as late as 80 years and older[20]; however, the highest incidence is between 25 and 45 years.[10] The sex incidence is equally divided.[10] The incidence of intracranial aneurysms has varied from 0.69 to 1.5 per cent in routine autopsies.[6, 10, 20] Nevertheless, the incidence is probably much higher, as the brain is carefully examined or removed in less than half of the examinations. Often the aneurysm is buried in a clot of blood and remains undiscovered.[22] Martland reported that approximately 2 per cent of all cases of sudden death are due to subarachnoid hemorrhage.[15] Figure 1 shows the anatomic distribution of intracranial saccular aneurysms. The internal carotid artery and the middle cerebral artery are the commonest sites, each representing about 25 per cent; the anterior communicating and the basilar artery each account for about 15 per cent; the anterior cerebral artery is responsible for about 10 per cent; and the balance is fairly equally divided.[17]

As early as 1887 Eppinger suggested that intracranial aneurysms were of congenital origin.[5] Most anatomists agree that such aneurysms are actually rem-

From the Division of Neurosurgery, Department of Surgery, University of Texas Medical Branch.

Read before the Section on General Practice, Texas Medical Association, Annual Session, Galveston, May 2, 1951.

nants of vessels present in early embryonic life. The circle of Willis is the remainder of a large network of small vessels present in the fetus. As these remnants are reabsorbed little nubbins may be left behind and in certain situations may become aneurysms.[3, 4, 7, 11]

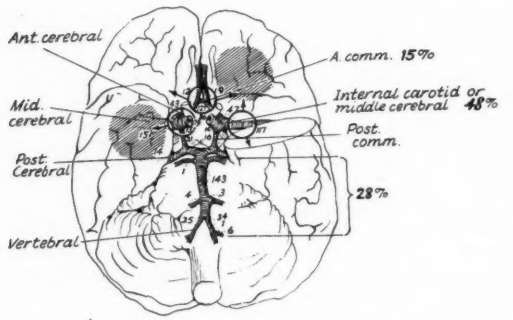

FIG. 1. Diagram showing the locations of intracranial aneurysms. The shaded areas represent the commonest sites of intracerebral hemorrhages. Percentages are taken from McDonald and Korb.[16]

These saccular aneurysms vary from 3 mm. to 5 cm. in diameter. They may be round, oval, or smoothly lobulated and may be attached directly to the artery or by a small short neck. The wall of the sac is usually quite thin and is composed of fibrous tissue without any media or elastic tissue. Thrombosis within the sac is common in the larger aneurysms. Minute extravasations of red blood cells and phagocytic blood pigment in the aneurysmal walls are seen frequently and suggest that leakage from the aneurysm might well take place by a gradual dissecting process without necessarily a sudden, violent explosion.[20]

CLINICAL FEATURES

The clinical features of patients with intracranial aneurysm can be classified into two groups: (1) Sudden onset of unconsciousness or neurologic deficit with spontaneous subarachnoid hemorrhage or (2) certain vague prodromal symptoms followed by cranial nerve palsies and/or spontaneous subarachnoid hemorrhage.

The clinical features of the first group are the result of generalized increase in intracranial pressure and diffuse spread of blood throughout the subarachnoid space. The generalized excruciating headache is the commonest symptom and loss of consciousness is the second most common. Rarely initially but often in combination are the symptoms of vertigo, visual disturbances, irrationality, and generalized convulsions.[10] Ninety per cent of such attacks are sudden.[20] Approximately 34 per cent of these sudden episodes occur in patients walking, standing, or resting. In one series undue muscular exertion preceded the attack in only 18 per cent. About 10 per cent of patients will show papilledema with hemorrhages.[20] Many will reveal only symptoms of meningitis such as stiff neck, fever, headache, malaise, diplopia, papilledema, albuminuria, and mild mental changes. These meningeal signs are indicative of blood in the subarachnoid space acting as an irritant.[14] If only the meningeal signs are present, one might assume that a leaking aneurysm has been sealed off by the surrounding cerebral tissue and that therefore further damage has been prevented. When focal neurologic signs such as hemiplegia, speech disturbances, visual field defects, and convulsions are suddenly added to the subarachnoid hemorrhage, one must assume there also has been an intracerebral hemorrhage. Therefore, a sudden alteration in the state of consciousness and the presence of bloody spinal fluid with or without the focal neurologic and meningeal signs are diagnostic of spontaneous subarachnoid hemorrhage. About 20 per cent of the intracranial arteriovenous malformations have subarachnoid hemorrhage as their initial feature.[18]

However, certain signs and symptoms that occur before the rupture of an aneurysm are often of sufficient diagnostic value to cause investigation. Patients with these symptoms constitute the second group in which the initial feature is not spontaneous subarachnoid hemorrhage. A unilateral, intermittent, severe headache of several months' duration often may precede a sudden rupture. Occasionally some patients for years will have headaches which gradually increase in severity, frequency, and duration.[1, 9] The involvement of the ocular and extraocular cranial nerves should arouse suspicion. The third cranial nerve is most frequently involved, whereas the fifth is next.[1, 19, 20]

DIAGNOSTIC PROCEDURES

The diagnosis is suggested by the sudden appearance of symptoms and/or abnormal neurologic findings. In the majority of patients this diagnosis can be confirmed by lumbar puncture, which will yield pink to bloody fluid, frequently under increased pressure. In a small group of patients the subarachnoid hemorrhage is intracerebral or the aneurysm itself may act as an expanding lesion; in such instances diagnosis depends upon the history and abnormal neurologic findings, as the spinal fluid is colorless. After a lumbar puncture is done, roentgenograms of the skull should be made. Occasionally local erosion of bone from pressure of the aneurysm around the sella turcica and lesser wing of the sphenoid may be seen. Rarely, calcification in the wall of the aneurysm is visualized.

The next diagnostic procedure and perhaps the most helpful in treatment is arteriography. A radiopaque material, 35 per cent Diodrast, is injected into the carotid artery in the neck either by introducing the needle through the skin or by surgically exposing

the artery. Roentgenograms of the skull in anteroposterior and lateral projections made immediately after the injections visualize the anterior and middle cerebral arteries and demonstrate about 90 per cent of saccular aneurysms and all arteriovenous aneurysms supplied by these vessels.

When an aneurysm is present but is not visualized by the dye, it may justly be assumed that the aneurysm is thrombosed. If visualization of the posterior third of the circle of Willis and posterior fossa vessels is desired, a vertebral arteriogram is performed, again either by percutaneous or open method. Some authors are of the opinion that a bilateral arteriogram should be done since from 10 to 25 per cent of such patients have multiple aneurysms and at least from 3 to 5 per cent are bilateral.[19] Obviously, other diagnostic procedures should come to mind, depending upon the etiology; these might include hematologic studies in blood dyscrasias, cardiovascular studies in hypertensive encephalopathy (however, about from 20 to 25 per cent of patients with aneurysms have hypertension), and intracranial air studies in brain tumors. About 1 per cent of brain tumors usher in their onset with subarachnoid hemorrhage due to bleeding of the neoplasm.

TABLE 1.—*Mortality Rate of Untreated Subarachnoid Hemorrhage.*

Author	No. of Cases	Mortality Rate Initial Attack (%)	Recurrent Attacks (%)	Mortality Rate for Recurrent Attacks (%)	Neurosequela (%)
Wolff[23]		29	52	40	20
Magee[15]	150	35	33	64	32
Richardson and Hyland[20]	118	52	13.5	50	62
French and Blake[10]	500+	44.3	51.5	Not noted	Not noted
University of Minnesota[10]	66	32	57	34	15
Hamby[12]	98	45	50.5	72	Not noted

PROGNOSIS

As seen in table 1, from 30 to 50 per cent of patients die as a result of their first episode of subarachnoid hemorrhage. Because of these alarming figures, this disease entity requires early diagnosis and treatment. From 15 to 60 per cent of the patients who survive the initial episode of bleeding will have recurrent hemorrhages; the mortality rate for recurrent bleeding ranges from 35 to more than 70 per cent. The time most frequent for recurrent hemorrhage is between the second and third weeks after the primary attack (figure 2). About from 20 to 40 per cent of patients surviving initial hemorrhage have neurologic deficits.[10]

In considering the prognosis, the following factors yield unfavorable results: history of previous hemorrhage, multiple hemorrhages while in the hospital, mental disturbance after the attack, and convulsions during the attack. Associated hypertension apparently does not necessarily offer a poor prognosis. With the recent advances in the field of neurologic surgery, the appalling mortality rate has been reduced to less than 25 per cent.[10]

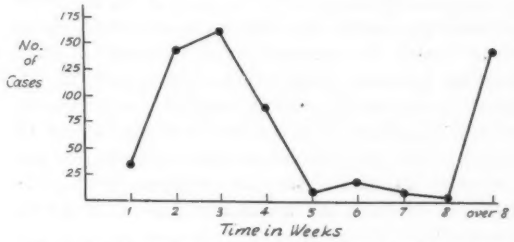

FIG. 2. Graph representing the time of recurrent attacks in spontaneous subarachnoid hemorrhage in 603 cases. [After French, L. A., and Blake, P. S.: Subarachnoid Hemorrhage and Intracranial Aneurysms, Bull. Univ. of Minn. Hosp. *21*:285 (Feb. 24) 1950.]

TREATMENT

Treatment is medical or surgical. It is our opinion that conservative treatment should be used only after arteriography has shown the aneurysm to be surgically inaccessible. Under conservative treatment the patient is put to bed for from six to eight weeks. It is believed probably safer to keep him in bed for four weeks after his symptoms have disappeared. Mild sedation should be given to relieve any activity, but suppression of respirations must be avoided. Morphine should never be given. Obviously, during an attack with unconsciousness, an adequate airway must be maintained, as difficulty with respiration will increase the already existing cerebral anoxemia. Constipation should be avoided and mild cathartics and enemas can be given if necessary.

The control of increased intracranial pressure, when present, is important. Intravenous hypertonic solutions or intravenous caffeine may be given. Drainage of cerebrospinal fluid from the lumbar region is sometimes advocated; if this is done, the initial spinal pressure should be lowered by only a third. The main objection to all methods of lowering the intracranial pressure is that if the pressure is decreased too much, bleeding either will recur or continue. Therefore, these measures must be carried out with caution. Spinal puncture is of no value in an attempt to remove the blood from the fluid. Deep roentgen therapy, which has been advocated in the treatment of the arteriovenous abnormalities, has no place in such conditions.

The surgical treatment falls into two categories. The indirect attack is ligature of the common and/or internal carotid artery in the neck. This procedure is actually of value only in those aneurysms located in or about the carotid artery and not for those beyond

the circle of Willis.[19] Carotid ligation has been in vogue for a number of years as the choice treatment, but within recent years neurosurgeons have become more adept and bolder and have removed aneurysms beyond the circle of Willis. Perhaps the commonest intracranial approach is the trapping of the aneurysm between two silver clips. Unfortunately certain aneurysms cannot be removed simply because of their location. However, since it is not the purpose of this paper to discuss the various surgical procedures involved, it suffices to say that the mortality rate of patients with spontaneous subarachnoid hemorrhage due to an intracranial saccular aneurysm treated surgically is less than half the rate in those treated conservatively.

SUMMARY AND CONCLUSIONS

Spontaneous subarachnoid hemorrhage is for the most part due to saccular and arteriovenous intracranial aneurysms. With arteriography accurate localization is being accomplished and therefore surgical intervention is possible. Without the benefits of surgery, about 50 per cent of the patients succumb during the initial episode of bleeding and about 25 per cent die from recurrent hemorrhages. The greatest incidence of recurrent bleeding occurs about two weeks after the initial episode. Therefore, as soon as the diagnosis is made and the patient can withstand a craniotomy, an arteriogram should be performed. Conservative therapy should be instituted only when a proved aneurysm is surgically inaccessible. The mortality rate has been considerably reduced with surgical treatment.

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ABSTRACT OF DISCUSSION

DR. ANDREW S. TOMB, Victoria: According to the report of Drs. Jackson and Smith, approximately 2 per cent of all cases of sudden death are due to subarachnoid hemorrhage; if this be true, this diagnosis must be missed often in general practice. Too often, particularly in older patients, there is a tendency to classify these sudden attacks under the broad heading of cerebral accidents, and probably physicians have been guilty of the sin of omission in not classifying them further.

As Drs. Jackson and Smith report that 50 per cent of first attacks are fatal, the general practitioner should concentrate on improving his diagnostic acumen in the other 50 per cent who might be helped with further diagnostic procedure and possible surgical intervention. Their paper makes me wonder also if many cases that heretofore have been called migraine might not benefit from further investigation as to the presence of an intracranial aneurysm. I have no doubt that an awareness of this pathologic entity will ere long enable general practitioners to refer for neurosurgical intervention cases that otherwise would be fatal.

American Dermatological Association Essay Contest

The American Dermatological Association is offering a prize of $300 for the best essay submitted for original work, not previously published, on some fundamental aspect of dermatology or syphilology. Manuscripts must be submitted not later than December 1 to Dr. Louis A. Brunsting, secretary, American Dermatological Association, 102-110 Second Avenue, S. W., Rochester, Minn., from whom further information may be obtained.

Arthritis and Rheumatism Foundation Fellowships

The Arthritis and Rheumatism Foundation is offering research fellowships in the basic sciences related to arthritis. Predoctoral fellowships will range between $1,500 and $3,000 per year and postdoctoral fellowships between $3,000 and $6,000. Application forms may be obtained from the Medical Director, Arthritis and Rheumatism Foundation, 535 Fifth Avenue, New York 17. The deadline is November 15, 1951.

ROENTGENOGRAPHIC ABNORMALITIES IN DISEASE OF CERVICAL INTERVERTEBRAL DISKS

Report on 23 Patients with Compression of Cervical Root

GEORGE EHNI, M. D., Houston, Texas

DEGENERATIVE and traumatic disturbances of the cervical intervertebral disks are common causes of pain in the neck, shoulder, scapular region, arm, and hand. They are so frequently accompanied by roentgenographic abnormalities that the radiologic examination is of great importance in their diagnosis and in distinguishing them from other conditions such as cervical rib, the scalenus anticus syndrome, neoplasm of the spinal cord, syringomyelia, and neuritis, which often but erroneously are considered to be more frequent causes of pain in the neck and upper extremity.

Use of the words "herniation" and "protrusion" has been avoided in the title because this report is concerned not only with the classic soft cartilaginous bulging of a part of the disk in a lateral location where the root is squeezed as it enters the intervertebral foramen but also with two closely related mechanisms producing pressure on the root: (1) dorsal prominence of the disk consisting of a hard osteoarthritic ridge sufficient to compress a root in its foramen and (2) collapse of a disk to such a degree that the resultant loss of altitude of the foramen squeezes the root even in the absence of much of a prominence on the dorsal aspect of the disk. I regard all three abnormalities as originating in a primary degenerative or traumatic failure of the intervertebral cartilage. The clinical pictures are identical; it is only in the form the root compression takes that any difference exists. This point of view relates localized cervical osteoarthritis rather intimately to disk herniation, which is as it should be not only because of their similar etiologies but also because of their response to surgical treatment.

How commonly pain from cervical disk abnormality occurs can be learned from the report of Young,[4] who during one year saw 84 patients with complaints of shoulder and brachial pain. Seven of these patients had localized conditions in the shoulder causing pain; 1 had a cervical rib, and 62 had lesions of the cervical root, of which 55 had lesions of a single root. Thirty-nine of his patients had radiographic evidence of intervertebral disk disease consisting of narrowing of the interspace, localized osteoarthritis, or localized curve reversals at the fifth to sixth or sixth to seventh cervical interspace.

Earlier, Oppenheimer[1, 2] reported upon 72 patients seen in a department of radiology with a presumptive diagnosis of arthritis or rheumatism in explanation of shoulder pain. Sixty-six showed narrowing of the intervertebral foramen, most of them in association with thinning of the intervertebral disk with or without osteoarthritic proliferation of the vertebral borders. Although Oppenheimer believed he was not describing the picture produced by herniation of the nucleus pulposus, his roentgenograms in addition to narrow interspaces showed curve reversals and localized osteophytic overgrowth, the triad now known to be common indicators of cervical disk herniation. The favored sites of occurrence in his patients with "neurodocitis" or "discogenetic disease" were fifth to sixth and sixth to seventh cervical interspaces, as is the case with disk herniations. The clinical picture he described was identical with herniated cervical disk as we now know it, and he did not prove the absence of disk herniation in his cases by myelography or exploration. A large number of his 66 patients with diskogenetic disease must have had herniated disks, or at least root pain arising from pressure on a root by some prominence of disk origin encroaching on the root in the intervertebral foramen.

PRESENT STUDIES

Some idea of the frequency of cervical disk disease as compared with herniations in the lumbar region can be gained by noting that during an interval when I saw 52 patients with herniated disks, 37 were lumbar and 15 were cervical. During the same period that 14 herniated lumbar disks were operated upon, 6 herniated cervical disks were similarly dealt with. The smallness of this series may account for the high ratio of cervical to lumbar ruptures.

This report is concerned with the roentgenographic abnormalities observed from 1946 through 1950 in 23 consecutive patients with surgically proved cervical disk disturbances which compressed the cervical roots. There was an approximately equal distribution between men and women. All the lesions occurred at either the fifth to sixth or sixth to seventh cervical interspace, with essentially equal division between the two levels. In age these patients ranged from 34 to 66 years. Two patients with midline

Read before the Section on Radiology, Texas Medical Association, Annual Session, Galveston, May 1, 1951.

FIG. 1a. A lateral roentgenogram of a patient with a herniated disk at the sixth to seventh cervical interspace. Note especially the straightening, or actual reversal, of the curve in the lower cervical area, which appears as a transition, higher than usual, between thoracic kyphosis and cervical lordosis, with reduction in the number of cervical vertebrae participating in the lordotic curve.

b. A lateral roentgenogram of a patient with an osteoarthritic ridge across the fifth to sixth cervical interspace producing pressure on the root of the sixth cervical nerve. In addition to the narrowed and osteoarthritic interspace at this level and the level just below, the upper two-thirds of the cervical curve is straightened.

c. A lateral roentgenogram of a patient with cartilaginous herniation at the sixth to seventh cervical interspace. Note that the normal cervical curve is disturbed by two cervical lordotic curves: the first composed of the first through the fifth and the second of the sixth and lower vertebrae. These two curves intersect at the fifth to sixth cervical interspace, producing a mild gibbus. This roentgenogram is of the single patient whose herniation was not at the gibbous site.

d. A lateral roentgenogram of a patient with herniation at the sixth to seventh cervical interspace. In addition to the apparent cephalad transition of the transformation of thoracic kyphosis to cervical lordosis, note the osteoarthritis at the fifth to sixth and sixth to seventh interspaces.

e. A lateral roentgenogram of a patient with a transverse osteoarthritic ridge at the sixth to seventh cervical interspace and a cartilaginous herniation at the sixth to seventh interspace. Dependence upon this roentgenogram, showing the disturbance essentially localized to a single interspace, would have resulted in finding an osteoarthritic ridge, but the larger soft cartilaginous herniation at the sixth to seventh cervical interspace would have been overlooked.

f. An anteroposterior myelogram of the patient in *e*. There are bilateral, small, root sleeve defects at the fifth to sixth cervical interspace and a larger defect of similar nature on the left at the sixth to seventh interspace. The patient's pain was limited to the neck and left arm.

cervical herniations producing compression on the spinal cord were operated upon during this same interval but are not included in this report.

The plain lateral roentgenograms of the cervical spine were unusually informative in this group of 23 patients. Only 4 had roentgenograms which appeared normal, whereas in the roentgenograms of 19 were shown disturbances of the cervical curve, narrowing of an interspace, osteophytic proliferation of vertebral margins, or combinations of the three. Seventeen of the patients with abnormality showed

FIG. 2. A lateral roentgenogram of the patient with the greatest narrowing of a cervical interspace. Myelography and exploration revealed only a moderately small osteoarthritic ridge, but foraminotomy with decompression of the roots was followed by relief of pain.

alterations in the curve ranging from mere straightening of a segment of the curve (fig. 1a and b) to localized reversal seeming to center at a single interspace (fig. 1c). Disturbance of the curve was the only abnormality observed in the lateral roentgenograms in 3 of the 19 patients. In instances in which the lateral roentgenogram showed enough of the cervical spine below the level of curve reversal, the localized reversal at a single interspace appeared a gibbus with the normal lordotic curve broken into upper and lower segments intersecting at the site of reversal (fig. 1c). In other instances in which the shoulder obscured the lower portion of the curve, the reversal appeared as a cephalad extension of the normal transition from thoracic kyphosis to the cervical lordosis (fig. 1a). Seven of the patients had a cervical gibbus, and in all but one of these the lesion producing the root pain was found at the site of the curve reversal.

Sixteen of the 19 patients with abnormality observed by plain roentgenogram showed osteoarthritic changes at one or more disk spaces. Five of these patients had the proliferative process occurring at two or more interspaces (fig. 1d), whereas in 11 it was essentially localized to a single interspace (fig. 1e). All 11 of these patients had demonstrable disk prominences at the arthritic interspace, but 2 with only moderate-sized osteoarthritic ridges not encroaching upon the roots in the foramens to a pronounced degree by myelography and subsequent exploration were observed to have large soft cartilaginous herniations severely compressing a root at the space just below the osteoarthritic interspace. It was the lower lesion in each of these 2 patients that was considered more significant in the production of symptoms (fig 1f).

Thirteen of the 19 patients with changes noted in plain roentgenograms had narrowing of the interspaces. Three had narrowings at more than one space and in association with osteoarthritic changes at the severally narrowed spaces (fig. 1d). In the remaining 10 patients the narrowing affected but a single interspace. One of these patients (fig. 2) had narrowing of such a degree as to reduce the size of the foramen and produce root symptoms in the absence of pressure by the disk margin itself—the situation referred to as "neurodocitis" or "discogenetic disease" by Oppenheimer—and this mechanism may have been present in one other patient. In 8 of the 10 patients with narrowing of a single interspace, the significant root-compressing lesion was found at the site of the narrowed interspace, but in 2, already referred to in connection with hypertrophic changes, larger soft cartilaginous herniations were observed at the space just below the narrowed and hypertrophic interspaces.

From a consideration of the focal changes in the 19 patients with abnormalities observed on plain roentgenograms, it is apparent that changes limited to a single interspace usually, but not invariably, correctly indicate the site of the root involvement.

Myelography

Myelography was performed for 21 of the 23 patients in my series. A brief discussion of the technique followed appears elsewhere[3]. In 19 of the 21 myelograms evidences of cervical root involvement by abnormal prominence of disk origin were seen and were proved at operation.

One of the 2 patients not having a root sleeve defect was the patient with the greatest thinning of a single disk in the entire group referred to pre-

viously. Myelography showed only a mild transverse indentation of the dural sac at the narrowed interspace, and exploration confirmed the absence of root compression by disk herniation, though a midline osteophytic ridge was found. Decompression of the roots by foraminotomy was done, resulting in relief of pain. The pain was considered to have been caused by narrowing of the intervertebral foramen referred to by Oppenheimer as a consequence of "discogenetic disease."

The other patient without root sleeve defect had a gibbous type of curve reversal with a minimally thinned and osteoarthritic interspace (fig 3a). Myelography showed only an increased radiolucency at the site of curve reversal (fig. 3b), and at operation an osteophytic ridge was seen. Discernible evidence of compression of nerve roots was totally lacking, but foraminotomy and fusion was followed by relief of all pain.

In the 19 patients with root sleeve or laterally indenting defects of the myelographic oil column, the existence of such lesions was proved. Since the 2 without such defects were proved to have the abnormalities indicated by myelography, it seems fair to state that in every case in which myelography was used the pathologic lesion was correctly indicated.

The characteristics of the normal cervical myelogram, on which there seems to be little published information, should be reviewed. Normally, the shadow of oil in the cervical region (fig. 4a) is of equal width at all levels, allowing, of course, for the scalloping of the margins at the points where the roots emerge. There is denser filling along the lateral borders of the column of medium than in the central axial portion. This central axial lucency is caused by the spinal cord and by the caudolaterally directed root filaments. These root filaments arise in series along their respective axial lines of the cord, and those emerging at any one foramen are gathered together into bundles so that by the time they have reached the root sleeve, the fan-shaped distribution of the filaments has been transformed into a more or less cylindrical root. This transformation accounts for the triangle of radiolucency which points downward and laterally directly at the root complex shadow. Taken in series, these downward and laterally directed points of the root filament shadows make the central area of radiolucency look something like a stylized Christmas tree. The lateral borders of the shadow appear serrated from me-

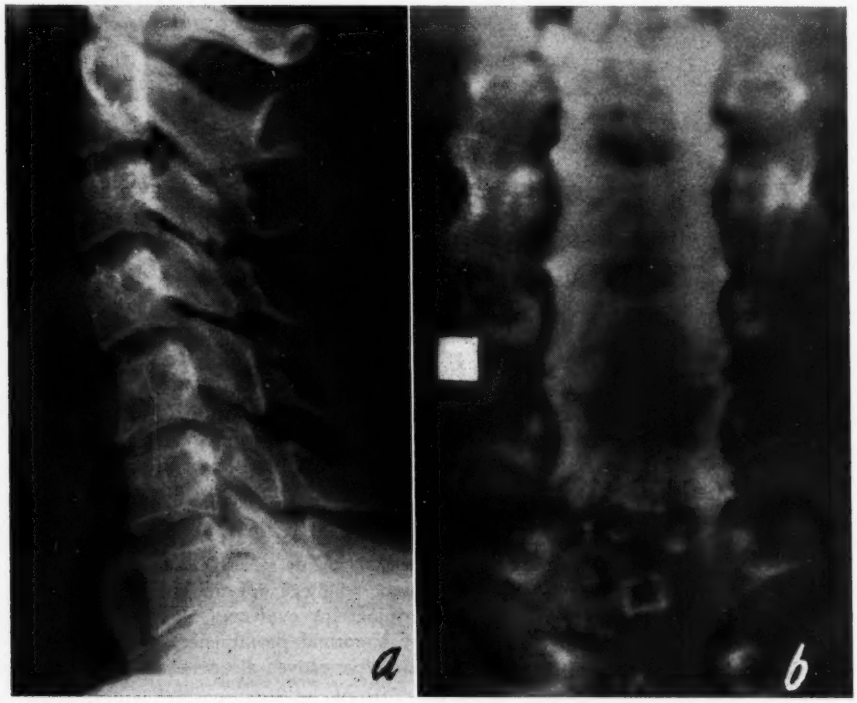

FIG. 3a. A lateral roentgenogram showing minimal narrowing and osteoarthritis at the fifth to sixth cervical interspace.

b. An anteroposterior myelogram of the patient in *a*. Note the increased radiolucency across the fifth to sixth cervical interspace with an absence of root defects.

dium filling the root sleeves above and below the roots at the points of exit. Each root shadow complex is composed of several parts: the central area of lucency caused by the bundle of root filaments; a sharp angle of filling with medium above the root bundle, which it is convenient to call the upper lip; and a less acute angle of filling with medium below the root bundle, which may be called the lower lip.

In addition to the ideal appearance of the shadows about the root, there are certain normal variants. In one the medium does not enter the acute angle of the upper lip, making for poor definition there (fig. 4b). In another the individual root filaments within the dural sleeve stand out in relief, giving a somewhat combed appearance (fig. 4b). A third normal variation is seen when the dural sleeve is filled all the way to ganglion, making a more or less caplike formation at the ganglion (fig. 4c). Characteristic of normal root sleeve shadows taken as a group are the following: (1) they occur one directly above the other in a straight vertical line, (2) they are equally spaced along this vertical line, and (3) the right and left root shadows of any pair are at exactly the same level on opposite sides of the myelographic shadow.

FIG. 4a. An anteroposterior myelogram of a normal cervical region of the cord and roots at several levels.

b. A portion of an anteroposterior myelogram of a normal cervical area, showing on the left moderately poor filling of the upper lip of the root sleeve shadow; on the right some of the component bundles of the root itself are displayed by the contrast medium.

c. An anteroposterior myelogram of a patient with a unilateral herniation at the sixth to seventh cervical interspace. In addition to greater than usual filling of the root sleeves at the seventh cervical to first thoracic interspaces, note the superior and medial displacement of the root complex at the sixth to seventh cervical interspace.

The abnormalities seen in postero-anterior cervical myelograms in patients with cervical disk herniations are five. They are as follows:

1. The exaggeration of the normal radiolucency over a disk (fig. 3b) has already been discussed and will not be considered further.

2. A lateral compression lesion of the root is indicated by the appearance of broadening of the root bundle shadow within the sleeve (fig. 1f and 5a).

3. The entire root and its sleeve shadow complex may be medially displaced so that all the root complexes on one side do not appear in a straight vertical line (fig. 4c and 5a).

4. The root sleeve shadow on one side or the other may be pushed in a cephalad direction so that the intervals between the several shadows on one side are not equidistant (fig. 5a).

5. There may be obliteration of the entire root sleeve shadow with more or less indentation of the parent oil column (fig. 5b, c, and d).

In the twenty-one myelograms in this series, broadening of the root bundle shadow was seen six times; medial displacement of the root complex was seen three times; superior displacement of the root complex was seen twice, both of these in association with medial displacement; and the root shadow complex was totally obliterated with more or less indentation of the parent oil column in eleven instances. Thus in only a little more than half of the patients was the myelographic abnormality of the obvious sort usually associated with extradural lesions. The rest of the patients had small defects which might easily have been overlooked on fluoroscopy and even on roentgenograms if but small amounts of mediums were used.

SUMMARY

Cervical disk herniation and related disturbances are common causes of neck and arm pain. Roentgenographic abnormalities consisting of curve reversal, narrowing of the interspace, osteoarthritic proliferations, and myelographic deformities are almost always present, making the radiologic examination extremely important in the diagnosis. A surgically verified series of 23 cervical disk lesions is presented together with an analysis of the radiographic findings and the correlation of these findings with the proved pathologic anatomy.

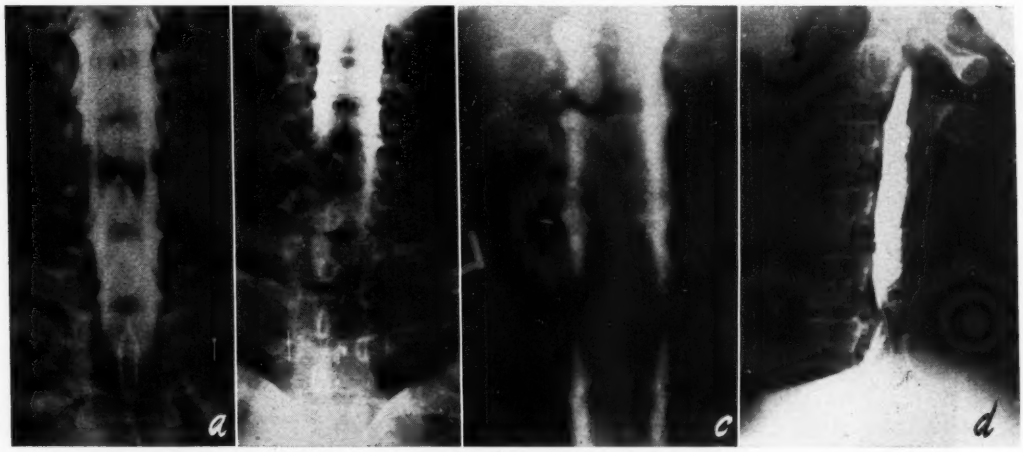

FIG. 5a. An anteroposterior myelogram of a patient with bilateral cartilaginous herniations at the sixth to seventh cervical interspace. On one side the root bundles within its sleeve is in normal position but appears broadened or flattened, whereas on the other the root bundle appears of about normal size but the root complex shadow is displaced superiorly and medially.

b. An anteroposterior myelogram of a patient with a large herniation at the sixth to seventh cervical interspace. There is obliteration of the entire root shadow and indentation of the parent oil column.

c. An anteroposterior myelogram of a patient with a very large cartilaginous herniation at the fifth to sixth cervical interspace. There is obliteration of one root sleeve shadow plus practically an absence of medium across the entire interspace.

d. A lateral myelogram of the patient in *c*, showing a dorsal displacement of the cervical dura and its contents amounting to approximately one-third the anteroposterior depth of the spinal canal. Despite the large lesion, there was no clinical evidence of neurologic deficit either in the painful left arm or in the legs.

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1006 Hermann Professional Building.

DERANGEMENT OF THE INTERVERTEBRAL DISK

Possible Pain Mechanisms

HARRY B. MACEY,* M.D., Temple, Texas

INTEREST in derangement of the intervertebral disk in the low back was stimulated by the report on posterior protrusion of the intervertebral disk by Mixter and Barr[4] in 1934. Posterior protrusion is now recognized as the most common cause of low back and sciatic pain. There are other conditions of clinical significance, however, which result from a derangement of the component parts of the intervertebral disk. Symptoms are produced because of bony changes or a change in the bony anatomic relationship of the lumbar vertebrae. Specific and nonspecific infections of the disks are excluded.

Coventry, Ghormley, and Kernohan[1] demonstrated a progression of the components of the intervertebral disk through the second decade of life. After the second decade of life, the component parts of the intervertebral disk show regression with a gradual increase in degenerative changes. In the advanced decades, conspicuous fissuring of the annulus fibrosus and fibrous tissue replacement of the nucleus pulposus occur.

Steindler,[6] in 1947, in discussing the intervertebral disk and its relationship to sciatic pain stated: "During the process of degeneration of the disc, and as a result of it, the equilibrium between the disc and the longitudinal ligamentous system is destroyed, and this disturbance is only incompletely compensated for by arthritic ledges and buttresses. The result is that the junction between the vertebral bodies is loosened; and stress is placed, therefore, upon the supporting ligamentous and muscular system."

In the above observations, the first supported by pathologic study and the second by clinical observation, a reason may be found for some of the unexplained causes of low backache. Not infrequently, a patient with an undiagnosed low backache is seen months to years later with roentgenologic evidence of skeletal changes as a result of intervertebral disk changes. It is only rational to assume that the intervertebral disk acts in a supporting capacity for the vertebral bodies. Hence, if there is degeneration of the component parts of the disk, there may be a change in the relationship of the surrounding bony parts.

Acute trauma, repeated mild trauma over a period of time, or intervertebral disk changes enhanced by a vigorous life, cause a changed relationship of the bony articulations. Such changes may affect the articular cartilage, synovial covering, and supporting ligaments, and degenerative arthritis may result.

Putti and Logroscino[5] found arthritic changes in the posterior articulations in the spines of all persons more than 30 years of age. Some authors believe that abnormally placed facets play an important role in arthritic changes, but arthritic changes from abnormally placed facets are usually secondary to intervertebral disk changes. Persons with facets of the asymmetrical type theoretically should be more susceptible to changes, and clinically, this theory is borne out.

The result of intervertebral disk changes may be demonstrated roentgenologically in the following conditions: (1) narrowing of the intervertebral disk spaces with associated changes in the posterior articulations, (2) posterior subluxation of the fifth lumbar vertebra, (3) intervertebral herniation, and (4) posterior herniation.

NARROWING OF DISK SPACES

In the young patient, narrowing of the intervertebral disk spaces is usually the result of severe trauma. Early roentgenograms may appear negative, and changes in the component parts of the intervertebral disk may not be disclosed for a period of from one to several years. Narrowing of the intervertebral disk space is frequently seen in the late years

FIG. 1. Lateral roentgenogram demonstrating narrowing of the lumbosacral interspace.

From the Department of Orthopedic Surgery, Scott & White Clinic. Read before the Section on Radiology, Texas Medical Association, Galveston, May 2, 1951.

**Deceased August 5, 1951.*

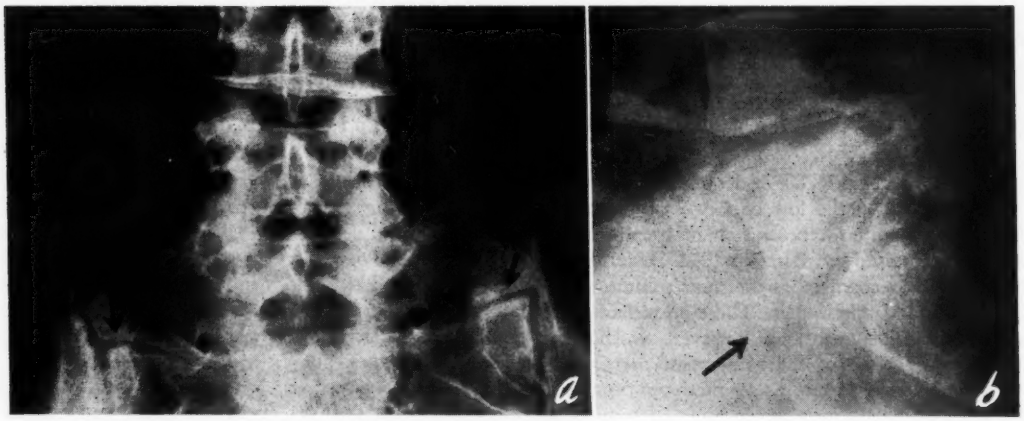

FIG. 2a. Anteroposterior roentgenogram showing bilateral sacralization of the sixth lumbar vertebra.
b. Lateral roentgenogram of the same spine showing congenital narrowing of the lumbosacral interspace with posterior narrowing of the functioning lumbosacral joint. (Congenital narrowing of the lumbosacral interspace should not be confused with pathologic narrowing of a normal lumbosacral interspace.)

of life with no known history of acute trauma. This condition commonly occurs in persons who have engaged in a vigorous physical life with repeated trauma to the spine. As a result of disk thinning and changes, the vertebral bodies approach each other and an increase in density may result from pressure and irritation between the bony surfaces (fig. 1 and 2). A changed relationship in the facets with narrowing of the intervertebral spaces must follow. Similar sclerotic changes may be noted in the posterior articulations or facets (fig. 3). With sufficient changes in the relationship of the facets, an impingement may occur between the tip of the superior articular facet and the pedicle or transverse process above, or an impingement between the tip of the inferior facet and the lamina of the arch below may occur. Hadley[3] recently has demonstrated how such changes may produce bony encroachment or narrowing of the intervertebral foramen with constriction or pressure on the nerve roots resulting in sciatic pain. Bony encroachment and impingement per se lead to arthritic changes and pain (fig. 4).

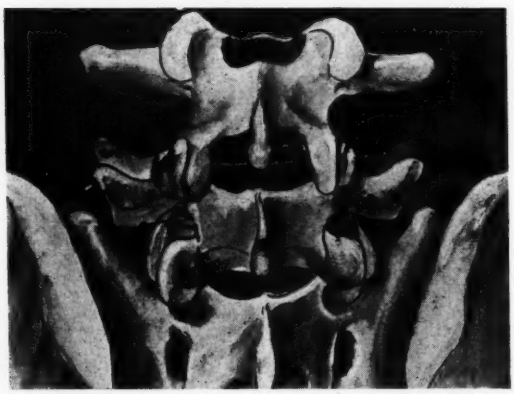

FIG. 3. Schematic drawing showing a change in the relationship of the posterior articulations following intervertebral disk change with a change in bony anatomic relationship.

It is safe to assume that with changes in the relationship of the bones of the spine, associated changes in the supporting ligaments and capsular structures, such as degenerative changes and changes of an inflammatory nature, may be anticipated. Buttresses and ledges develop, as pointed out by Steindler,[6] and can be demonstrated roentgenologically.

DISPLACEMENT OF VERTEBRA

Posterior displacement of the fifth lumbar vertebra, unless congenital, can result only from associated disturbances in the normal anatomy of the posterior articulations and the intervertebral disk. Fletcher[2] reported narrowing of the intervertebral space in 30 per cent of his cases with posterior displacement of the fifth lumbar vertebra. As pointed out by Coventry, Ghormley, and Kernohan,[1] this changed relationship is explained by a degeneration in the intervertebral disk from either necrosis and dessication of the nucleus pulposus or rupture of the annulus fibrosus with extrusion of nuclear material. With loss of intervertebral support and lessening in height of the intervertebral space, posterior subluxation easily may follow. The amount of displacement may be influenced by the anatomic position of the facets. Its occurrence anatomically is most likely in facets of anteroposterior type or in the so-called normally placed facets. Posterior narrowing of the lumbosacral interspace should arouse suspicion of this change in the anatomic relationship of the vertebral body and its posterior articulations (fig. 5).

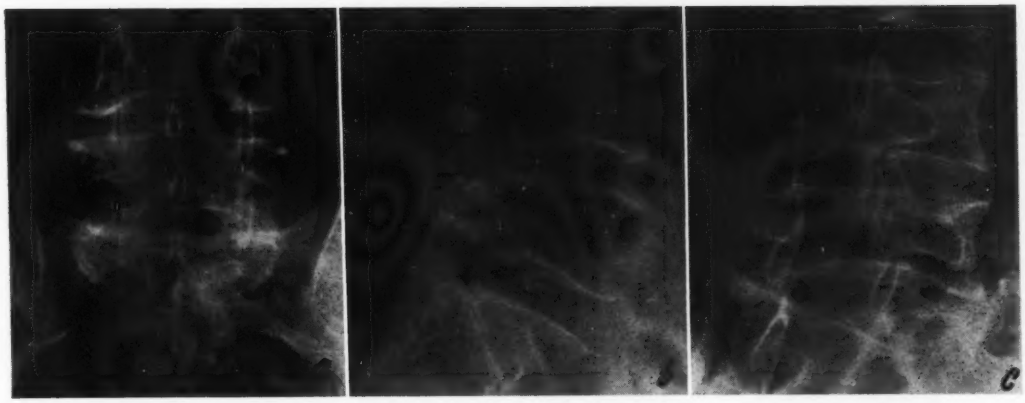

FIG. 4a. Anteroposterior roentgenogram showing bony impingement of an inferior articulation of the fourth lumbar vertebra and the superior articulation of the fifth lumbar vertebra on the right side. The articulations show a rounding off and there is associated hypertrophic lipping of the vertebra.

b. Lateral roentgenogram showing forward displacement of the fourth lumbar vertebra on the fifth with no evidence of a defect in the neural arch. This is a result of a changed bony anatomic relationship of the posterior articulations.

c. Three-quarter roentgenograms demonstrating facet changes.

INTERVERTEBRAL HERNIATION

Intervertebral herniation of the nucleus pulposus usually is not recognized at the time of trauma. If recognized later, it is not thought to be of any particular clinical significance; however, it does offer an explanation of the acute backache sometimes observed without other diagnostic findings. Its clinical importance is the possibility of such a lesion after acute trauma to a normal spine or acute pain with little or no trauma to an osteoporotic spine. Recognition and treatment may shorten the period of disability and apprehension.

In the intervertebral herniation of the nucleus pulposus, there is either an invagination of the cartilaginous plate or a defect in the bony plate through which the nuclear material escapes. In the event of either condition, an infraction of the bone with resulting pain in the back will occur. Diagnosis may be established later when there is a zone of intervertebral calcification within the body of the vertebra or depression in the vertebral bony plate. At this period, healing is usually complete. Symptoms have probably subsided and, therefore, are considered to be of little clinical significance. This herniation offers an explanation for a previously undiagnosed backache and may contribute to, or hasten intervertebral disk changes.

POSTERIOR HERNIATION

Posterior herniation of the nucleus pulposus is capable of producing low back pain without associated sciatic pain by direct irritation of the nerve endings in the posterior longitudinal ligament and annulus fibrosus. If a herniation persists over a sufficient period, nerve root compression with sciatic distribution of pain may be anticipated eventually. Sciatic pain, a common indicator of a posterior protrusion, usually is unilateral but may be bilateral. For confirmation of a posterior protrusion, myelography, a comparatively easy examination in the majority of instances, is usually diagnostic. From a clinical standpoint, myelography serves three purposes: (1) establishment of the presence or absence of a posterior herniation and its location, (2) exclusion of a cord tumor, and (3) determination of the presence of multiple disks and their locations.

A questionable defect demonstrated by myelography may be found at the time of surgery to be a large extrusion. The discrepancy in the size of the defect on myelography and the size of the protrusion found at the time of surgery may result from one of several causes such as narrowing of the dural sac or an unusually wide neural canal in its side-to-side

FIG. 5. Lateral roentgenogram of the lumbosacral interspace showing posterior narrowing and posterior displacement of the fifth lumbar vertebra on the sacrum.

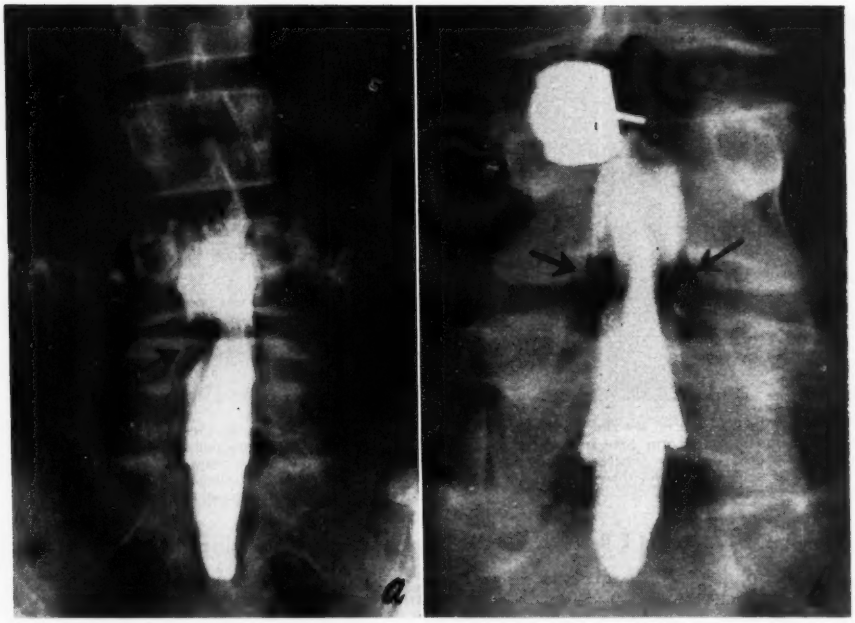

FIG. 6a. Myelogram demonstrating a characteristic lateral herniation of the intervertebral disk at the fourth lumbar interspace on the right side.

b. Characteristic appearance of a bilateral lesion at the fourth lumbar interspace.

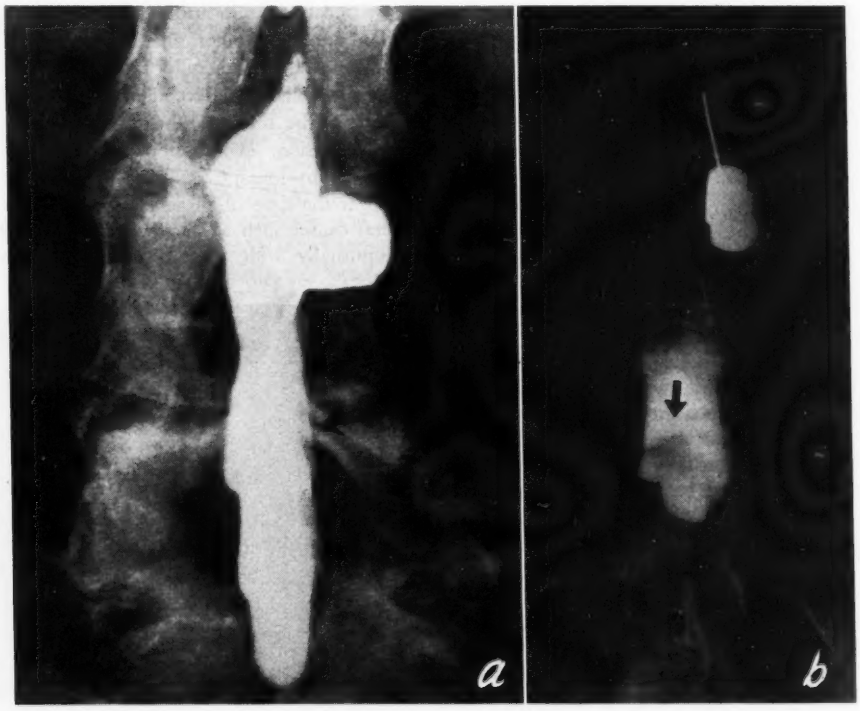

FIG. 7a. Myelogram demonstrating amputation of the lumbosacral nerve root on the left side.

b. Myelogram demonstrating a central protrusion.

diameter. A narrow anteroposterior diameter of the neural canal, especially with a hypertrophied ligamentum flavum, would require little protrusion to result in nerve root compression, whereas the myelogram may reveal only a suggestive defect. The ideal diagnostic finding indicating an extrusion is a large defect with ragged, indented margins (fig. 6).

Elevation or amputation of the nerve root or a thinning of the intraspinal medium at an intervertebral level are sufficient indications for an exploratory operation, provided the clinical symptoms justify such a proceeding (fig. 7). In the final analysis, the clinical symptoms and findings are the indication for surgery. The myelogram is a mechanical test for confirmation. Unless the indications for surgery are clear-cut, myelography should be deferred until surgery is contemplated.

CONCLUSIONS

This discussion has been offered in an attempt to explain low back pain resulting from intervertebral disk changes. A roentgenologic examination is desirable for confirmation of a suspected clinical diagnosis and necessary for elusive causes of backache. This observation, of course, is applicable to only those backaches resulting from mechanical causes. Always, there is need for close harmony between the roentgenologist and the orthopedic surgeon.

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ABSTRACT OF DISCUSSION

DR. DEAN B. JONES, San Antonio: I remember the days when we had no inkling of the true cause of "sciatica" and no specific treatment. The recognition of the role of the nucleus pulposus certainly has been a forward step in the management and understanding of these cases. The important part played by myelography is recognized by all.

There remain a number of cases in which myelography is not definitive. I am informed that a further diagnostic procedure which concerns the radiologist is being developed. This consists of the introduction of a needle into the nucleus pulposus and the direct injection of Diodrast. In the presence of an intact disk this opaque material outlines the normal elliptical nucleus. If there is herniation without rupture, the distortion is outlined. In the event of total rupture the opaque material is "extravasated" along the neural canal. This procedure promises to be a valuable adjunct in those cases in which the myelogram is indecisive.

Dr. Macey's report of postoperative changes is of interest to me since I have not observed changes of the early or late aseptic necrosis type.

KIT FOR DIABETIC EDUCATION

A kit of audio-visual materials for patient education in diabetes has recently been made available for use by physicians, nurses, dietitians, and other professional workers engaged in the instruction of diabetic patients. It was prepared cooperatively by three national agencies concerned with the welfare of the diabetic patient: the American Diabetes Association, Inc., the Diabetes Section of the Public Health Service, and the American Dietetic Association. The important facts a diabetic patient should know about taking care of himself are covered in the kit equipment, which requires the use of a record player and a 35 mm. film projector.

Complete kits may be bought from Health Publications Institute, Inc., 216 North Dawson Street, Raleigh, N. C. Persons wishing to obtain the kit for preview may borrow it from their state health departments. Those wishing kits for short term loan may get them from the Film Library, Communicable Disease Center, Public Health Service, Atlanta, Ga.

SHOULD CANCER VICTIMS BE TOLD?

Whether or not it is advisable to tell a patient that he has cancer depends upon the way he manages other life situations.

Writing in the August 25 issue of *The Journal of the American Medical Association*, Drs. Nathan S. Kline, Worcester, Mass., and Julius Sobin, Newark, concluded that a person who has a realistic approach to life in general should be told. They pointed to the great changes in the attitudes of cancer patients within the past ten years and stated that one of the greatest problems is the psychologic management of these patients. If the patient is told he has cancer, they continued, the truth should be given in easy stages to alleviate the severe psychologic shock as much as possible. He should be reassured immediately as to the nature of the treatment so that he will feel that everything is not hopeless and everything possible is being done for him.

Whether or not the family should be told should be reviewed by the physician and patient, the doctors believe. Some member of the family should be informed of the patient's condition. The patient should be encouraged to continue with his regular job as long as possible and to interest himself in substitute activities. The family should spend as much time as possible with the patient, but at no time should the patient be reminded of his "tragedy."

At times, according to the article, patients will lose touch completely with reality and should be referred to a psychiatrist. Others will develop compensatory outlets, the most frequent being a turning to religion.

Tuberculosis control will not be found in the sum of case finding, medical care, and social assistance—it will be found rather in the coordination of these activities, and in the manner in which they are knit together.—Robert J. Anderson, M. D., and Edward T. Blomquist, M. D., Pub. Health Reports, February 2, 1951.

LABORATORY AIDS IN DIAGNOSIS AND TREATMENT OF RHEUMATOID ARTHRITIS

BENJAMIN B. WELLS, M.D.; S. WILLIAM ROSS, M.D.; and ROBERT D. LOWREY, M.D., Little Rock, Arkansas

DEMONSTRATION of the antirheumatic effects of ACTH and cortisone[6] has been followed by an immense amount of interest expressed in both the medical and lay literature. Many practical and theoretic considerations have been pursued actively. As could be expected, there was an initial tendency to overestimate the possible benefits of a new agent in the treatment of a disease that causes a great deal of painful disability and generally is resistant to many forms of therapy. To be expected, also, was a period of indiscriminate and excessive use of the hormonal agents which led to unnecessary complications as well as to therapeutic disappointments. It is not so easy to explain the continued use and exploitation of certain more or less closely related hormones. In a number of instances the latter have been advocated in advance of adequate clinical or experimental evaluation, and some continue to be advocated in the face of overwhelming evidence of their ineffectiveness. These and other developments are all too recent to permit final evaluation, and speculations on the point are not within the intention of this communication.

Regardless of the benefit, or lack of benefit, that ultimately may be ascribed to endocrine therapy, there has been a tremendous stimulation of clinical and research interest in rheumatoid arthritis. This interest is shared by the clinical pathologist, and it has given him cause to reconsider how he and his laboratory can best serve the efforts of physicians who undertake the diagnosis and treatment of this disease.

The information upon which this paper is based has been gathered during a period of approximately two years in a large rheumatology clinic with laboratory facilities devoted exclusively to this purpose. All types of joint disease and nonarticular rheumatism have been studied and the closest coordination has been maintained between the laboratory and the clinical efforts. The literature has been searched carefully for all contributions to the clinical pathology of this field, and many of the more important techniques have been set up and evaluated in our own laboratory. Our chief objective has been to select methods that can be used under ordinary conditions of medical practice and which yield useful data without undue expense or technical complexity. If our conclusions seem a bit prosiac, it may be because we find (1) that many of the technically simple and well known procedures continue to occupy positions of first importance in the field of rheumatology, (2) that methods recently introduced for the study and control of ACTH and cortisone therapy are not necessary generally for safe and intelligent use of these agents, or (3) that clinical observations without the use of laboratory tests usually reflect the patient's true condition and his response to therapy in a highly satisfactory manner in point of time, sensitivity, and specificity. The best of our present observations leave much to be desired, and there is great need for further work in the clinic and the laboratory, particularly for cooperation between the two. One of the most important contributions of ACTH and cortisone therapy has been to raise rheumatoid arthritis out of the limbo of diseases that are neglected because nothing can be done for them and to call it to the attention of clinicians and clinical pathologists alike.

From the Department of Medicine, University of Arkansas School of Medicine.

Read before the Section on Clinical Pathology, Texas Medical Association, Annual Session, Galveston, May 1, 1951.

DIAGNOSTIC STUDIES

Fever, leukocytosis, neutrophilia with a shift to the left, increased sedimentation rate, and the clinical signs of local or systemic inflammatory disease constitute the most valuable evidence differentiating rheumatoid arthritis from the exceedingly common degenerative joint disease with which it may be confused. These observations also provide the basis upon which the activity of the disease can be graded[18] and upon which a response to therapy can be evaluated. In spite of their technical simplicity and the fact that they are not new in this field, these procedures deserve the highest consideration as practical methods for study of the rheumatic patient. Specific comments about these types of studies as well as others relating especially to diagnosis of rheumatoid arthritis appear in the following paragraphs.

Blood Tests

Erythrocyte Sedimentation Rate. — We prefer Westergren's method for determining the sedimentation rate of erythrocytes. This method gives a somewhat wider range of values between normal and pathologic bloods, and the results are not appreciably influenced by changes in the concentration of red cells as they are in methods using anticoagulants that do not dilute the whole blood. This consideration may be of importance in following the progress of

a disease in which a variable degree of anemia occurs, although some physicians believe that anemia is not an important factor in determining the sedimentation rate. In any event, we avoid the use of all correction factors derived from the hematocrit or hemoglobin determination.

We find a significant proportion of patients in whom the sedimentation rate does not parallel other evidence of inflammatory reaction in the joints, but this is rarely a source of confusion. Administration of salicylates tends to decrease the sedimentation rate, sometimes without comparable objective or subjective changes in the disease. A similar decrease in the sedimentation rate follows the use of ACTH or cortisone in a large number of diseases, including rheumatoid arthritis and rheumatic fever. Here, also, the change does not necessarily represent an improvement of equal degree in the disease process.

Total Leukocyte Count.—Leukocytosis of mild to moderate degree is found usually in the acute phases of rheumatoid arthritis and may be expected to parallel the clinical signs of local and systemic reaction to the inflammatory process. Leukopenia is not uncommon when the disease becomes chronic, while total counts within the range of normal are found in that great majority of cases that present themselves in smoldering or localized form with mild or moderate systemic reaction. Occasionally we have been led to suspect the presence of disseminated lupus erythematosus by finding a leukopenia in a patient who has high fever, loss of weight, and malaise associated with joint signs simulating mild to moderate progress of chronic rheumatoid arthritis.

Differential Leukocyte Count.—An increase in the percentage of neutrophils with proportionate immaturity may be expected to accompany the increase in total leukocyte count. Although by no means specific, this observation has been noted to parallel the severity and activity of rheumatoid arthritis and to be only slightly less accurate than the sedimentation rate in this respect. We have not observed a significant eosinophilia as a direct result of rheumatoid arthritis, but counts as high as 20 per cent are reported to occur.

Hemoglobin and Red Cell Count.—A mild to moderate anemia of hypochromic, microcytic type is found regularly in association with chronic rheumatoid arthritis. Often the anemia is resistant to treatment with iron, although some good results recently have been reported following the use of intravenous iron. Folic acid has been effective in some cases. Important benefits both as regards the anemia and the progress of the joint disease often are secured by transfusion.

Plasma Protein Concentration.—In the absence of malnutrition or other complications, the total plasma protein concentration usually approaches the normal, but a slight hyperglobulinemia with reversal of the albumin-globulin ratio is found in a high proportion of active cases. A return of the albumin-globulin ratio toward the normal is seen during recovery from an acute phase of the disease and is an important sign of favorable progress.

Blood Glucose and Glucose Tolerance.—In a number of our patients with rheumatoid arthritis we have noted an abnormally high and sustained rise in the standard glucose tolerance curve. For the most part this has not been accompanied by glycosuria. This phenomenon may be due to relative carbohydrate starvation in the period preceding the test rather than to any fundamental change in carbohydrate metabolism. In any event, there appears to be no reason to regard this finding as having important bearing on either the diagnosis or treatment of the patient.

Although ACTH and cortisone have been shown to produce a slight but inconstant increase in the fasting blood sugar and some small decrease in glucose tolerance[17], these changes do not militate against the use of ordinary therapeutic doses of the hormones. It is only in the presence of severe or insulin resistant diabetes that one must consider withholding ACTH or cortisone for the treatment of rheumatoid arthritis. Fortunately, this coincidence of diseases is a relative rarity.

Other Blood Chemistry.—Blood uric acid determinations are often ordered in the hope of differentiating gout from rheumatoid arthritis. This notion is abandoned soon by anyone who acquires clinical experience in the field of rheumatology. The blood uric acid level when considered alone is more often a source of confusion than it is of assistance. The determinations are by no means free from technical error, and there are wide diurnal and individual fluctuations. The observation becomes of value only when considered in close correlation with the natural history of the disease. We see few instances in which the differentiation of gout from rheumatoid arthritis is assisted to any important degree by the blood uric acid determination.

In our rheumatology clinic we have used the blood urea or nonprotein nitrogen level as a rough check on kidney function. The results are viewed only as they fit together with other elements of the clinical record, but the routine seems to be justified in those patients with chronic degenerative disease in whom cardiac and renal decompensation are common complications. The blood cholesterol level has little importance in the study of rheumatoid arthritis, but we often have included it in our study of patients because of our interest in discovering the occasional case of palindromic rheumatism. In the latter, hypercholesterol-

emia has been observed. Most of our rheumatic patients have had normal levels of cholesterol or have shown decreases proportionate to their malnutrition and chronic debility.

Other Tests

Urinalysis.—Important renal changes are not characteristic of rheumatoid arthritis. The occurrence of cells and albumin in the urine or fixation of specific gravity should suggest the presence of some other disease. Hematuria, with or without renal failure, will raise the suspicion of disseminated lupus erythematosus simulating rheumatoid arthritis. Although glucose tolerance is impaired in a significant proportion of patients with rheumatoid arthritis, spontaneous glycosuria is uncommon. Glycosuria following the administration of ACTH or cortisone is not uncommon and appears to be due to a lowering of the renal threshold for glucose. Advanced nephritis, particularly with hypertension, must be regarded as a contraindication to the use of ACTH or cortisone, but in our experience this has not been a frequent or important barrier to the endocrine therapy of collagen diseases.

Bone Marrow Cells.—There is nothing strictly characteristic about the bone marrow cells in rheumatoid arthritis. As a rule, the apparent functional suppressions, as indicated by peripheral blood findings, are not confirmed by examination of the ordinary aspirated specimens. An increase in the number of plasma cells, often from 2 to 4 per cent of the total and occasionally as high as 10 per cent, has been common but not invariable in our patients.[16] It has been suggested that the increase in plasma cells in the bone marrow is correlated with hyperglobulinemia, but our observations offer no support to this opinion.

Spinal Fluid Changes.—In patients admitted to our study, we noted few indications for lumbar puncture, and we have not made a particular effort to study the spinal fluid changes. Our occasional observations have been consistent with those of Ludwig, Short, and Bauer, who found the protein increased between 47 and 105 mg. per 100 cc. of spinal fluid in 28.6 per cent of their patients with rheumatoid spondylitis while only 6.8 per cent of patients with peripheral joint disease showed changes of similar degree. As a rule, there is no increase in the number of cells or other abnormality of the spinal fluid. These facts are important since the differential diagnosis of rheumatoid arthritis often includes diseases that are known to alter the spinal fluid.

Synovial Fluid Characteristics.—We made a number of examinations on synovial fluid, especially during the early months of this study, but we were not impressed by any practical value of the findings. The characteristics of synovial fluid in normal and pathologic states have been well documented,[8, 14] but we have seldom seen a patient in whom the diagnosis of rheumatoid arthritis has any important dependence upon this examination. Cytologic and bacteriologic studies offer important confirmatory and differential evidence in infectious joint disease, but, as a group, these conditions are usually distinguished from rheumatoid arthritis by other means. Xanthochromia or an increase in the icterus index of synovial fluid may be useful in differentiating the arthritis of recent trauma from the various chronic diseases of the joint.

Sheep Cell Agglutination Test.—Waaler found that the serum of patients with active rheumatoid arthritis contains a substance which agglutinates sheep erythrocytes previously sensitized by exposure to sheep cell hemolysin (ambocepter). Rose and others made the first attempt to apply this observation as a practical diagnostic test.[15] It was found that the agglutinin is not adsorbed by boiled beef erythrocytes or by boiled guinea pig kidney; hence, it is considered to differ from the Forssman's antibody and the heterophil antibody of infectious mononucleosis.

TABLE 1.—*Sensitized Sheep Cell Agglutination Test for Rheumatoid Arthritis.*

Diagnosis	No. Patients	Titer		
		<1.56	1.56	>1.56
Rheumatoid arthritis	21	4	2	15
Rheumatoid spondylitis	7	6	0	1
Questionable rheumatoid arthritis	11	8	0	3
Rheumatic fever	9	9	0	0
Disseminated lupus erythematosus	7	2	1	4
Periarteritis nodosa	1	0	0	1
Scleroderma	1	1	0	0
Degenerative joint disease	14	14	0	0
Fibrositis and psychogenic rheumatism	11	10	1	0
Nonarthritic conditions	18	18	0	0
Totals results	100	72	4	24

More than 200 tests were run on the 100 patients included in this table. The figures recorded here were the highest titers obtained for each patient.

The original test method was studied in 1949 by Miller and others,[10] who failed to find any practical diagnostic value of the test in rheumatoid arthritis. A modification of the procedure was proposed by Heller, Jacobson, and Kolodny.[5] We have used the latter method with minor, but perhaps important variations. We are not satisfied with the technique in its present form, and the number and variety of cases that we have studied are not sufficient for final evaluation. Nevertheless, the test justifies further study.

Our results in patients are shown in table 1. The test is regarded as positive if definite agglutination is observed in the patient's serum at dilutions of 1 to 56 or greater.

Obviously, it is not possible to draw any broad conclusions upon these limited results. They suggest, however, that an antibody peculiar to rheumatoid arthritis and disseminated lupus erythematosus is not formed in other diseases from which these must be distinguished. In this test, rheumatoid spondylitis differentiates itself from peripheral joint disease, suggesting, as do many other observations, that these two conditions are distinct etiologic entities.

Bacteriologic and Immunologic Studies.—General bacteriologic procedures can be dismissed with little more than mention. Smears and cultures of joint fluid, blood cultures, and similar studies are useful when the infectious forms of arthritis are being considered. Since it has been shown that bacterial bodies are rapidly removed from the joint space, it is no surprise to find an apparently sterile synovial fluid in the presence of infectious joint disease. For this reason it has been suggested that direct smears and cultures be taken from involved regional lymph nodes. This procedure has been particularly recommended for the diagnosis of tuberculous arthritis. We have not found it necessary to use this means of diagnosis. No bacterial organisms are found in significant relation to rheumatoid arthritis. The occasional instance in which Streptococci are isolated from the blood has no important clinical interpretation except as it may indicate a complication of the disease.

A number of laboratory procedures intended to indicate immunity or sensitization to Streptococci have been used in the study of rheumatoid arthritis. Among these are the serum agglutination titer for the group A hemolytic Streptococcus, the antistreptolysin-O titer, and the tests for antifibrinolysin. These and other observations are the basis of important theoretic considerations, particularly our belief in the Streptococcus as an etiologic agent in rheumatoid arthritis, rheumatic fever, and certain closely related conditions, but we believe that the tests have no significant practical value in ordinary clinical work. We have not studied the various immunologic tests in our own laboratory, since there are many well conducted observations in support of the negative conclusion.

Histopathologic Examinations.—We have carried out a large number of biopsy procedures on joint tissue and extra-articular structures. The result of this work has been disappointing, and important recommendations cannot be made. The gross presence of rheumatic nodules is a clinical observation of some consequence, but their histologic description contributes little of fact and may produce confusion. By actual joint biopsy we often have satisfied our curiosity, but our sections do not contribute facts beyond those established nearly half a century ago.[11]

Gross atrophy of muscles adjacent to joints involved in rheumatoid arthritis is an outstanding feature of this disease, but, again, the histologic studies have not contributed information of definite practical value.

The muscle biopsy has been thoroughly explored by a number of workers who described a more or less specific nodular myositis in 40 to 60 per cent of cases of rheumatoid arthritis and rheumatic fever.[19] It is difficult to establish control on this observation, however, since nodules of similar description have been found in nonarthritic patients carefully examined at autopsy. An arteritis also has been described in association with these diseases,[19] and it has been suggested that the latter lesions bear some fundamental relationship to the underlying pathologic process. All the histopathologic observations are of interest and have theoretic value, but none can be recommended for general use under ordinary conditions of practice.

The "L.E." Cell Phenomenon.—We have been impressed by the relatively large number of cases of disseminated lupus erythematosus that simulate rheumatoid arthritis. During a period of a little more than twelve months, our rheumatology clinic discovered no less than a dozen instances of this disease. Many of these cases lacked the classical skin and renal findings and would not have been diagnosed except for the demonstration of "L.E." cells in the bone marrow or the production of "L.E." cells by incubation of normal marrow with the patient's serum. We have used the technique described by Hargraves, Richmond, and Morton[3] as modified by Berman and others.[1] For the production of "L.E." cells in vitro we have used the procedure of Haserick and Bortz.[4] Extensive observations of this phenomenon have been made by one of us (S.W.R.) and will be reported elsewhere.

STUDIES DURING THERAPY

During the relatively short time that ACTH and cortisone have been in clinical use, our ideas as to the desirability and necessity for laboratory control have undergone a great deal of change. In retrospect, it is apparent that most of the laboratory observations are not essential to the care of the patient. These observations now can be regarded as investigative measures which have helped to define the activity of the hormones as to range of safe and adequate dosage, some of their more obvious metabolic effects, and the indications or contraindications for their use.

Although the need and opportunity for further research along these lines is certainly not at an end, it is a mistake to feel that elaborate laboratory controls are required for safe and intelligent use of these agents. We have learned that ordinary clinical

observations give practically all that we need to know about the response of the patient to the hormones, tolerance or intolerance to the treatment, complications, and side effects or overdosage phenomena. By ordinary clinical observations we refer to the patient's sense of well-being, subjective or objective changes in his joint disease, increase of appetite, insomnia, euphoria, mental depression or confusion, changes in body weight, weakness or lassitude, rounding of the face or deposition of fat over the shoulders, the appearance of abnormal hair, and acne or other skin changes. We know that, with rare exceptions, these signs and symptoms occur well in advance of changes that can be observed by laboratory means. We recognize also that the various procedures developed in connection with the use of ACTH and cortisone do not yield significant diagnostic or prognostic information, nor do they offer any satisfactory rationale for the selection of cases or for endocrine treatment in any case.

17-Ketosteroids.—Mason and Engstrom[9] recently reviewed the subject of 17-ketosteroids comprehensively. They discussed the various methods of extraction, purification, fractionation, and development of the color reaction; they also reviewed the results of various observers in this field. Except for the purpose of special metabolic studies, it is not necessary to use the more highly technical procedures. Those in which the color reaction is developed in a neutral extract of urine have sufficient accuracy for ordinary clinical purposes. The determinations are carried out using an appropriate aliquot of a twenty-four hour specimen; preservation is accomplished by adding 10 cc. of sulfuric acid to the total collection. The steroids are stable, and specimens may be kept for a long time at ice box temperature before the analyses are done.

These determinations have limited clinical significance. We no longer consider them an essential part of the diagnostic or therapeutic program in our rheumatology clinic. The urinary excretion of 17-ketosteroids has been reported to be low in gout. Some observers have found an increased excretion in active rheumatoid spondylitis[2] with a return toward the normal following roentgen therapy or treatment with pregnenolone. Other workers have not been able to confirm those results[7, 20].

In addition to the 17-ketosteroids, relatively simple chemical techniques are available now for determination of the urinary excretion of the so-called glycocorticoids (steroids related to cortisone). Although it may be assumed that the quantity of these substances appearing in the urine reflects important endocrine and metabolic changes of the body, their determination has not been correlated with significant clinical factors in the field of rheumatology.

Total Circulating Eosinophils.—Increased activity of the adrenal cortex as produced by conditions of stress and administration of ACTH are followed regularly by a significant decrease in the number of eosinophils of the peripheral blood. This observation is the most accurate means of noting an increased activity of the adrenal cortex. Administration of ACTH under normal conditions also is followed by a lymphocytopenia and an increase in the urinary excretion of 17-ketosteroids and glycocorticoids. All of these changes are less specific, are less reliable as an indication of cortical activity, and require more intricate technical procedures than the total eosinophil count. The method of eosinophil counting described by Randolph[13] can be used in any clinical laboratory. We prefer to use a modification of the staining fluid suggested by Pilot[12].

Since the effectiveness of ACTH in the treatment of rheumatoid arthritis depends entirely upon an adequate stimulation of the adrenal cortex, there may be occasion to use the eosinophil index as a measure of adequate dosage. After some experience in this connection, we believe that ordinary clinical observation of the patient and the course of his disease provides all essential information for the control of ACTH administration. Neither the value of the eosinophil index in helping to establish the range of dosage which is now recognized nor its importance in fundamental endocrine investigation can be doubted.

Peripheral Blood Cell Counts.—An increase in the red cell count and hemoglobin concentration usually follows effective treatment of rheumatoid arthritis when anemia has been a feature of the disease. Eosinopenia and lymphocytopenia resulting from the administration of ACTH or cortisone already have been mentioned. A total leukocytosis with a marked increase in the neutrophilic granulocytes also is observed commonly. A total white cell count of 20,000 or more is not unusual during treatment with the hormones.

Plasma Electrolyte Determinations.—Little doubt can exist that the complex relations between blood and tissue electrolytes is influenced greatly by adrenal cortical hormones. A disturbance of these relations might be expected to result from administration of ACTH or cortisone. It is scarcely possible, on the basis of available information, to define the effects in any manner that can be put to practical use in the care of patients.

During the use of hormone treatment, we have encountered in a number of instances what appeared to be excessive potassium loss. We found the determination of serum potassium levels gave less accurate information than the occurrence of clinical

symptoms and the typical electrocardiographic pattern. The latter seems to be the most reliable indication of potassium deficiency that we have. Perhaps most of the symptoms that are supposed to be associated with low serum potassium following ACTH or cortisone treatment are due actually to thyroid suppression as a result of the hormone administration. This hypothesis, suggested by Forsham and his associates, is supported by both clinical and experimental evidence.

CONCLUSIONS

A variety of laboratory tests may be done in an effort to determine the true diagnosis of rheumatoid arthritis, but fever, leukocytosis, neutrophilia with a shift to the left, an increased sedimentation rate, and the clinical signs of inflammatory disease are the most useful symptoms in differentiating the disease. Observation of these same symptoms also is a practical means of evaluating the response of the patient to therapy.

Although the laboratory procedures discussed in this paper have failed to give anything that properly can be called a measure of control for the use of ACTH and cortisone, we believe that certain pertinent facts should be emphasized. Laboratory observations were essential to the early work in which effective dosage, safety factors, and basic rationale were determined. Intelligent use of the hormones presupposes some understanding of these factors, a proper appreciation of the clinical signs and symptoms that characterize effective therapy or overdosage, and a knowledge of several important contraindications. In addition, we believe strongly that ACTH and cortisone should be used in the treatment of rheumatoid arthritis only when both the physician and the patient are aware clearly of the limited results that may be achieved, and when other indicated treatment measures are being used to their fullest advantage.

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ABSTRACT OF DISCUSSION

S. EDWARD SULKIN, Ph. D., Dallas: Drs. Robert Pike, Howard Coggeshall, and I have been interested in serologic reactions in rheumatoid arthritis during the past few years. It has been our experience that high differential sheep cell agglutination titers are obtained in rheumatoid arthritis with rare exceptions. However, a large proportion of patients who are clinically considered to have active rheumatoid arthritis showed differential titers less than 16 and are therefore indistinguishable in this respect from normal persons. There is some evidence that the titer may be correlated with the clinical status of the patient when the cases are classified according to severity and duration of illness.

Our experiments have failed to disclose the true nature of the factor in rheumatoid arthritis serum responsible for increased agglutination of sensitized sheep erythrocytes. Except for the fact that the phenomenon is due to a factor which is associated with serum globulins and for the fact that its effect is not diminished on storage for considerable periods, there are indications that it is not in the nature of a true antibody.

GLYCERINE PRESERVES CELLS IN DEEP FREEZE

Preservation of red blood cells with a deep-freeze process which uses glycerine as a protective medium may make possible large scale storage of red corpuscles for use in reconstituting whole blood from plasma, reports *Glycerine Facts* for September. Some cells are destroyed in the process, but recoveries of 80 to 90 per cent of the blood cells have been made regularly after a quick-frozen solution of whole blood diluted with glycerine is thawed. Successful preservation of sperm cells by the same method suggests that champion stock may sire herds of offspring even after death.

UROLOGIC PROBLEMS CONFRONTING THE GENERAL PRACTITIONER

HUB E. ISAACKS, M. D., and DOLPHUS E. COMPERE, M. D.,
Fort Worth, Texas

MANY urologic problems are easily recognized and simply corrected. With this premise in mind, certain of these abnormalities will be discussed and the importance of careful urologic inspection as part of the general physical examination will be emphasized.

The first opportunity for urologic inspection is in the newborn infant. At this time obvious congenital anomalies such as hypospadias, epispadius, and exstrophy of the bladder will be noted. However, without careful inspection of the external genitalia true hermaphrodism or pseudohermaphrodism may be overlooked. The life story of one of these persons reared as one sex and later transformed to the opposite sex is tragic. Realization that such a mistake should not have occurred should encourage the physician to inspect carefully the external genitalia in the newborn. An enlarged phallus or so-called penis does not necessarily mean the child is a male, and likewise an apparent vulvar cleft is not certain evidence of the child being a female. Hook[1] has demonstrated hermaphrodism in a number of patients with previously diagnosed hypospadias. Therefore, if there is the slightest doubt regarding the sex of a baby, a panendoscopic examination should be made and further urologic or surgical investigation conducted as indicated.

PENILE LESIONS

Another potential urologic problem in the newborn may be detected by inspection of the external urethral meatus. A narrowed urinary orifice may act as a constant obstruction to the passage of urine, resulting in urinary retention, hydro-ureter, and hydronephrosis; once such a damaged urinary tract becomes infected, it may lead to a perpetuation of infections and possibly sepsis with ultimate death. Early external meatotomy will prevent this sequence of events. Any patient, regardless of age, having a history of painful weak urination with a crusting discharge around the urethral orifice may be strongly suspected of having a stenosed urethral meatus, and examination will usually verify this impression.

Since carcinoma of the penis does not occur in patients having been adequately circumcised before the end of the first year, we would strongly recommend circumcision routinely shortly after birth.

Any lesion involving the glans or foreskin should be suspected of being either a cancer or a venereal disease. Since the diagnosis and treatment of these lesions is well known, no further discussion seems indicated.

Another penile lesion which may cause much concern to the patient and yet be either ignored or belittled by the physician is chronic cavernositis or Peyronie's disease. The progressively enlarging, hard, painless mass on the shaft of the penis usually causes the patient to fear cancer, or the abnormal curvature of the penis during erection may cause him to consult a physician. In either event, he should be reassured and should receive the explanation that the lesion represents a noninflammatory plaque formation in the fascial sheath of the corpora cavernosa, for which there is no specific therapy. Some urologists advocate surgical excision, whereas others use radiation therapy.

Eryethroplasia of Queyrat is an uncommon precancerous lesion which involves the glans penis and is said to be analogous to Paget's disease of the nipple; the etiology is unknown. The lesion is sharply marginated; irregular in contour; and flat, pinkish red, smooth, and velvety in appearance. It is not fixed or infiltrative; therefore it should be excised en bloc. If untreated, the lesion almost invariably develops into squamous cell carcinoma.

SCROTAL LESIONS

The commonest complaint referable to the scrotum is epididymitis, which is often mistakenly called orchitis. Only by careful inspection and palpation of the scrotal contents may one differentiate between lesions of the testicle and lesions of the epididymis or vas deferens. It should be remembered that tuberculous epididymitis does not respond to the ordinary therapeutic measures, therefore should be suspected in persistent or prolonged epididymitis. Genital tuberculosis is usually secondary to renal tuberculosis. Swellings of the epididymis are always inflammatory, whereas swellings of the testicle may be inflammatory or neoplastic. Testicular tumors are deceptive and demand surgical exploration in almost all instances. Survival of patients with malignant testicular tumors for more than five years is rare, regardless of the method of treatment.

Hydroceles are usually easy to detect by palpation and transillumination, but it must never be forgotten that the hydrocele may have been secondary to underlying inflammation or neoplasm. Simple aspiration

Read before the Section on Surgery, Texas Medical Association, Annual Session, Galveston, May 1, 1951.

or surgical extirpation are the recommended methods of treatment. We do not favor injection of a sclerosing material because of possible complications.

Torsion of the testicle usually starts with sudden severe pain, lacks a febrile response, and presents a swollen mass involving both the testis and the epididymis; the latter organ is drawn up tightly toward the external inguinal ring. Elevation of the scrotal contents does not relieve pain (Prehn's sign). In the early phase, manual untwisting may be successful or surgical exploration with detorsion will save the gonad. Lack of treatment will result in atrophy of both the testicle and the epididymis. This condition may be differentiated from mumps orchitis, which leaves a small atrophic testicle with a normal-size epididymis. Torsion of the hydatid of Morgagni (a rudimentary testicular appendage) may simulate torsion of the testicle. Treatment of course is surgical.

Acute septic orchitis is rare but is characterized by a sudden onset of testicular pain with extreme hyperpyrexia. Early orchiectomy is the treatment of choice.

URETHRAL DISORDERS

The urethral caruncle may readily be differentiated from a urethral prolapse; since only the posterior or lateral aspect of the urethral orifice is involved with the caruncle, whereas the entire circumference of the orifice is included in the prolapsed urethra. In either event, the redundant urethral mucosa should be excised, using either sharp dissection, electrocauterization, or ligation over an indwelling urethral catheter.

A common lesion involving the female urethra in all age groups, particularly after middle age, is chronic granular urethritis. The characteristic symptoms of irritation of the bladder, such as increased frequency of urination, urgency, dysuria, terminal hematuria, and a sense of incomplete emptying of the bladder, usually cause these patients to seek the services of a physician. Not infrequently inflammatory polyps are present near the vesical orifice. It has been our experience that these polyps have to be destroyed and the normal urethral mucosa restored before a good result is obtained.

Urethral strictures should be suspected from the history of urethral trauma or old infections, either nonspecific or gonorrheal. Intermittent or constant urethral dilatations, together with an internal urethrotomy when indicated, will relieve this abnormality. The old adage "once a stricture, always a stricture" should be impressed upon these patients.

Acute trauma such as rupture of the urethra is observed frequently in these days of industrial and transportation accidents. Few other major injuries may be handled so easily when recognized early, yet be so disastrous in terms of morbidity or mortality when treated late. It is not enough to say that in every case of fractured pelvis the diagnosis of ruptured urethra must be painstakingly excluded; it should be axiomatic that in every severely injured patient a urinary specimen should be examined. The voided specimen is ideal; however, if it is not available, a catheterized specimen should be obtained. The continuity of the urethral mucosa should be reestablished as soon as possible by either an open or closed operative procedure, depending upon the circumstances.

Congenital valves in the posterior urethra are rare but may be disastrous in effect when not detected early. The same sequence of events which occur with any obstructive lesion of the lower portion of the urinary tract will be manifest with urethral valves; namely, distention of the bladder, hydro-ureter, hydronephrosis, uremia, and death.

INFECTIONS OF URINARY TRACT

It is not our intention to discuss infections of the urinary tract in detail but rather to make a few suggestions. Any specimen of urine containing more than from 8 to 10 white blood cells per high power field should be stained for bacteria. When bacilli are found in a specimen, one of the sulfonamide preparations is recommended, whereas for the coccal infections penicillin usually is satisfactory. If after one week of this therapy the infection has not responded, complete urologic investigation, which includes cystoscopy and pyelography is advised. When these studies fail to demonstrate the etiology, cultures of the urine with specific antibody sensitization studies will indicate the most effective antibiotic drug. In patients having repeated infections of the urinary tract, we strongly advise cystoscopic examination with pyelographic study.

ENURESIS

Since approximately from 15 to 25 per cent of enuretic children have an organic disease, excretory urography with cystoscopic examination is recommended. The cystometric examination will demonstrate the etiology in a considerable number of these patients and when corrective therapy is initiated, surprisingly good results may be attained. In the remaining 75 to 85 per cent of enuretic children, there is either an inadequate habit formation or psychoneurotic tendencies which may require the services of a psychiatrist.

STERILITY

The young couple who have experienced a barren marriage in spite of their efforts and wishes to the contrary usually consult their family physician first.

It is his responsibility either to examine both parties thoroughly or refer them to a specialist. Since in approximately 60 per cent of barren marriages the woman is responsible, it is probably advisable to refer her to a gynecologist before sending the husband to the urologist. In each instance certain special examinations in addition to a careful history and complete physical examination are necessary before an accurate evaluation of fertility can be made. The urologist must study the prostatic secretions and eliminate any infection, if possible. Other special studies, such as cystoscopy, catheterization of the ejaculatory ducts, testicular biopsy, and determination of the basal metabolic rate, should be made when indicated.

A period of at least five days of sexual abstinence before collecting the seminal fluid is essential, and specimens collected in a sheath should not be studied because of inaccuracy of this type of examination. Usually it is advisable to evaluate two specimens collected from two to four weeks apart before reaching any conclusion about the husband's fertility status. Obviously if there is but a single spermatozoa present impregnation is possible; statistically speaking, however, sperm counts of fewer than seventy million per cubic centimeter of seminal fluid are unlikely to result in conception. Sperm motility, longevity, and morphology are other important factors affecting total fertility. Rarely the seminal fluid will be improved by the administration of vitamins and hormones. It is more rewarding to concentrate on full utilization of the spermatozoa that are actually present.

Artificial insemination may or may not be indicated but certainly should never be advised until after the fertility status of both the husband and wife has been completely and carefully evaluated.

MISCELLANEOUS CONDITIONS

Impotence is often a complex problem, frequently psychologic in origin and modifiable only by psychotherapeutic measures. The indiscriminate use of testosterone is not without danger, since approximately 20 per cent of men older than 50 years of age have carcinoma of the prostrate gland. Therefore, if testosterone is administered, it should be given in small doses for a limited period only.

Hematuria with or without pain should always demand a complete urologic investigation. When a physician says, "If it bleeds again, let me know" he actually means, "You may have cancer, but we will let it grow for awhile and see what happens." We have developed a solemn respect for gross painless hematuria and believe that any physician who treats it with pills and watchful waiting is doing an injustice to the patient. Approximately 85 per cent of these patients will have a neoplasm of the urinary tract.

Urologic diseases are by no means always betrayed by abnormal observations in the urine. Certain urologic lesions such as hydronephrosis, horseshoe kidney, renal ptosis, and carcinoma of the prostate gland, may well have normal urinary specimens. Here again, a careful history and complete physical examination are essential. Careful rectal palpation by the general practitioner for an early diagnosis of carcinoma of the prostate gland will enable the urologist to perform an effective radical prostatectomy. At present approximately 95 per cent of these patients have infiltrative neoplasms by the time they are seen by the urologist.

CONCLUSIONS

A careful study of all of his patients will allow the good general practitioner to recognize and correct certain urologic disorders. Also, by his thoroughness he will detect real or potential urologic problems which may be eliminated by the urologist. Careful histories and physical examinations mean good medicine, good medicine means good public relations, and good public relations are a specific cure for most of the problems confronting the medical profession today.

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1415 Pennsylvania Avenue.

ABSTRACT OF DISCUSSION

DR. HARRY M. SPENCE, Dallas: Drs. Isaacks and Compere have pointed out that unhurried history and physical examination will give the answer to the proper management of the majority of urologic ailments observed by the family physician. Furthermore, when the answer is not apparent after the history and physical review, the alert practitioner will recognize the necessity of further special study by the urologist.

I would emphasize that persistent or recurrent pyuria or the occurrence of blood in the urine demands immediate and complete urologic study.

It is worth noting that increasingly better results in pediatric urologic patients are being obtained through complete, early genito-urinary examinations, just as in adults.

Enuresis presents the only problem in which I differ with the authors. Certainly when the well known, time proved, simple measures fail, cystoscopy and pyelography should be done. These examinations usually show that the trouble is in the urethra, either granular urethritis or a large caliber stricture; both lesions respond to systematic dilatation with sounds. However, I recall few cases in which cystometric examination demonstrated the etiology and likewise few in which psychiatric treatment of the child was helpful. Here, as with impotence, I believe that after organic disease has been excluded by the urologist, these patients are handled far better by a sympathetic, understanding, and intelligent family doctor than by a specialist in any branch of medicine.

In regard to scrotal swellings, I heartily endorse the state-

ment by Drs. Isaacks and Compere that testicular tumors are very deceptive lesions and demand surgical exploration in almost all instances. Too often the possibility of a testicular tumor is disregarded and the lesion treated as an epididymitis until the opportunity for cure is lost. An occasional unnecessary operation for epididymitis is greatly preferable to treating a testicular neoplasm with a suspensory and antibiotic drugs.

Torsion of the testis is more common than generally thought. Undoubtedly many such cases have been treated conservatively as an orchitis or epididymitis with resultant testicular atrophy. The sudden onset of a severely painful testicular swelling with early edema of the overlying skin should suggest torsion. Immediate surgical exploration (within a few hours of onset) may permit detorsion or untwisting of the cord and save this otherwise doomed vital organ.

I should like to ask Drs. Isaacks and Compere two questions: (1) what treatment do they recommend for undescended testis and (2) how do they treat mumps orchitis?

DR. ISAACKS, closing: In answer to Dr. Spence's question regarding undescended testis, we believe that bilateral undescended testes should be surgically placed in the scrotum before puberty. In the case of a unilateral undescended testicle, adequate hormone stimulation is evidenced by the one testicle being present in the scrotum. Therefore, to preserve the spermatogenic function of the testicle, an orchidopexy should be performed during childhood and, by all means, before puberty.

Our experience in the treatment of mumps orchitis is limited; however, we are of the opinion that as soon as possible after swelling and pain in the testicle occur, the tunica vaginalis, as well as the tunica albuginea, of the testicle should be incised. Parallel incisions in the tunica albuginea extending a considerable distance along the longitudinal axis of the testicle are recommended. We recommend stilbestrol as an adjunct to this treatment even though there is no proof of its beneficial effect.

VESICOVAGINAL FISTULA

Its Cause, Prevention, and Management

MICHAEL K. O'HEERON, M.D., NEWTON McDONALD, M.D., and VANCE BULLOCK,† M.D., Houston, Texas*

ONE of the oldest afflictions to plague the human race is vesicovaginal fistula. The primitive concept of personal sin as a causative factor in disease, in addition to the taboos placed about sex and the sexual apparatus, probably account for the fact that this distressing condition was ignored until comparatively recent times. Thorek stated that the sixteenth century surgeon Ambroise Paré used a retinaculum in the treatment of vesicovaginal fistula. Credit for the first successful operation has been given to Roonhuysen of Amsterdam, who described his technique in 1663. He used the vaginal route and a vaginal speculum with the patient in the lithotomy position. The edges of the fistula were freshened and held together with quill pins around which silk thread was wound. Procedures similar to his were frequently carried out during the next two centuries. In 1852 James Marion Sims published his classic article describing the technique in his history-making operation on the slave girl Anarcha. He advocated the lateral or Sims position and used a speculum of his own design, silver wire sutures, and an indwelling self-retaining catheter. Most of the subsequent surgical techniques employing the vaginal approach are modifications of Sims's original procedure.

From the Department of Urology, Baylor University College of Medicine.

Read before the Section on Surgery, State Medical Association of Texas, Annual Session, Fort Worth, May 2, 1950.

**Resident Urologist, Veterans Administration Hospital.*
†Resident Urologist, Jefferson Davis Hospital.

Prior to modern operative obstetric techniques, prolonged and difficult labor accounted for most of the cases of vesicovaginal fistula. In 1942 Counseller[3] stated that 30 per cent of vesicovaginal fistulas developed after obstetric procedures. In 1945 Thompson reported a series of 42 cases, most of which followed deliveries. Recent authors have stressed the role of pelvic surgery and irradiation therapy of pelvic malignancies in the production of fistula.

CAUSES

The causes of vesicovaginal fistula may be classified as follows:

1. Obstetric.
   a. Prolonged labor resulting in pressure necrosis.
   b. Instrument delivery.
2. Surgical.
   a. Pelvic reconstructive surgery.
   b. Hysterectomy.
      (1) Abdominal.
      (2) Vaginal.
   c. Operative cystoscopy and transurethral resection of the neck of the bladder or vesical neoplasms.
3. Trauma from external violence.
   a. Fracture of pelvis.
   b. Penetrating injuries.
4. Infectious processes.
   a. Chronic cystitis.
      (1) Vesical calculi.
      (2) Infected diverticulum of the bladder.
      (3) Infected urethral diverticulum.
   b. Tuberculosis of the bladder.
   c. Syphilis.

5. Neoplasms.
   a. Carcinoma of uterine cervix.
   b. Carcinoma of uterus (corpus).
   c. Carcinoma of vagina.
   d. Carcinoma of bladder and urethra.
6. Radiation injury.
   a. Radium and radium emanation.
   b. Deep roentgen therapy.
   c. Contact roentgen therapy.
7. Foreign bodies.
   a. Intravesical.
   b. Intravaginal pessary.

As previously mentioned, prolonged and difficult labor has been one of the major causes of vesicovaginal fistula formation. Williams and other authors have discussed the pressure necrosis produced by a prolonged second stage of labor.

Modern obstetricians usually handle such cases by cesarean section or other operative procedures. One of our patients (case 1) developed a fistula after a forceps delivery. The factors responsible for vesicovaginal fistula would seem to be the obstetrician's judgment in using forceps and his technique. Needless to say, emptying the bladder prior to any obstetric procedure protects it from injury; Hinman has stressed this point in his textbook. An elective cesarean section prevents fistula formation in some patients.

As stated previously, progress in operative obstetrics has placed pelvic surgery at the head of the list of the causes of vesicovaginal fistula. The operation chiefly responsible is hysterectomy. Thorek suggested that the bladder be protected by reflection of its posterior wall prior to amputating the cervix. Both Thorek and Miller[7] advocated subtotal hysterectomy as a protection to the patient; Thorek in defense of this operation stated that the incidence of carcinoma in the remaining cervix is less than 1 per cent. Wall[10] wrote that "Cervical stump carcinoma is no more likely to occur after amputation of the corpus than in the intact uterus." The incidence of fistula as a complication of vaginal or abdominal hysterectomy is about the same.

In vaginal plastic procedures fistula may result from poorly controlled dissections or from inadvertently sticking a needle through the bladder wall. Dodson probably had this in mind when he cautioned against allowing the bladder to distend after pelvic surgery. One of our patients developed a fistula on the second day after a bladder retention which was relieved by urethral catheterization and removal of more than 30 ounces of urine; urine leaked from the vagina afterward. It would seem sensible routinely to use an indwelling Foley catheter for a few days after pelvic operations.

Formerly some surgeons performed vaginal cystotomy for drainage of infected bladders and the removal of vesical calculi. Vesicovaginal fistula was a frequent complication and therefore the operation fell into disrepute.

After endoscopic operative procedures such as transurethral resection of the bladder neck, fulguration of tumors, and litholapaxy, vesicovaginal fistula undoubtedly has occurred. Because this complication results from clumsy technique or poor judgment, it is not reported in the literature, but it should be mentioned as one of the causes of such fistulas.

External trauma rarely causes vesicovaginal fistula. Injuries associated with fracture of the pelvis will not cause a fistula unless a sliver of displaced bone perforates the bladder and vagina. Penetrating injuries such as stab and gunshot wounds may result in fistulas but seldom involve the urogenital tract.

Some chronic infections associated with bladder lesions may cause fistulas. A large calculus which is imbedded in a deep cystocele behind a contracted internal vesical orifice and surrounded by thick purulent urine may erode into the vagina. McCrea reported on a case in which the spontaneous rupture of a diverticulum of the bladder into the vagina formed a vesico-diverticulo-vaginal fistula. The commonly encountered urethral diverticulum also may rupture into the vagina, forming a urethrovaginal fistula. Ulcerations in advanced cases of tuberculous cystitis may erode into the vagina. Borjas and Diaz[1] reported the case of a 14 year old virgin who developed a fistula spontaneously from an advanced tuberculous cystitis.

Phaneuf and Graves[8] mentioned syphilis as a cause of vesicovaginal fistula but did not report actual cases.

Vesicovaginal fistulas are common late complications of carcinoma of the cervix and uterus, and to a lesser extent, of carcinoma of the urinary bladder, urethra, and vagina. Because carcinoma of the uterine cervix is by far the most commonly encountered neoplasm of the female urogenital tract, it is the most frequent cause of fistula in this group of lesions. In 1942 Morris and Meigs in a study of 1,938 cases of carcinoma of the uterine cervix observed that this condition was responsible for 19.3 per cent of the total number of cancer deaths in women. They reported that carcinoma of the cervix constituted 82.8 per cent of all cases of carcinoma of the uterus including the cervix. The most frequent complications which they noted were ureteral obstructions (7.4 per cent) and vesicovaginal fistula (5.1 per cent). Diehl and Hundley discussed changes in the urinary tract in carcinoma of the cervix and quoted Graves and Kickham as reporting that 75 per cent of their patients had involvement of the urinary tract. Graves and his associates[5] reported on 683 patients with carcinoma of the cervix, 209 of whom had bladder complications and 62 vesicovaginal fistulas.

Many fistulas result from the treatment of carcinoma of the cervix. During the past few years there has been a controversy concerning such therapy be-

tween the proponents of radium irradiation on the one hand and the advocates of radical surgery on the other. The problem has begun to crystallize in that the majority now prefer radical surgery in the lower grades of malignancies and radium or irradiation for the higher grades. Many physicians use both surgery and radium or irradiation for the lower grades, but all agree that the higher grades should be treated by radium or irradiation alone. Hoge in 1949 made an extensive survey of treatment methods of carcinoma of the cervix and noticed since 1945 an increased tendency to treat those malignancies, stage 1 and 2 by the League of Nations classification by radical surgery.

In the majority of patients with involvement of the bladder, it is diffcult to tell whether the complication resulted from the malignancy or the irradiation therapy. To avoid irradiation injury to the bladder and lower ureters, many techniques have been devised. Covington has incised the vaginal wall and placed the radium directly in the parametrium. In 100 cases he reported 4 rectovaginal fistulas and 4 obstructed ureters but no vesicovaginal fistula. Meigs has suggested studying the effect of irradiation on the vaginal epithelium before using it in a given case. Kaplan reported 3 vesicovaginal fistulas in 88 patients receiving irradiation.

Del Regato recommended transvaginal roentgen therapy, claiming better results and fewer complications than with radium. Twelve of his 76 patients had invasion of the bladder or rectum, 1 a rectovaginal fistula. However, there were no vesicovaginal fistulas. The three year survival rate of his patients was 44 per cent.

Diehl and Handley, Counseller,[4] Hinman, and others recommended routine cystoscopy prior to therapy in all cases of malignancies of the female generative organs. Regardless of whether the fistula results from the malignancy or irradiation therapy, it is usually a large defect difficult to repair. The tissues either are infiltrated or show a marked fibrosis. Secondary infection is often pronounced, making surgical repair difficult if not impossible.

Occasional causes of vesicovaginal fistulas are foreign bodies. As a result of perverse practices, foreign objects sometimes are passed into the bladder and vagina. Objects in the bladder may become encrusted and erode into the vagina. Thomas reported a case in which a woman attempted an abortion on herself with a pencil; however, she passed it into the bladder and lost it. A vesical calculus formed around the pencil and later eroded into the bladder. Uterine pessaries left in too long have been known to form fistulas from pressure necrosis and infection.

DIAGNOSIS

Vesicovaginal fistulas are easy to recognize. The patient gives a history of inability to control the urine. Inspection of the pelvis usually will reveal the vagina filled with urine, and pelvic examination may disclose the vaginal opening of the fistula. The fistula may be palpable as an indurated area in the anterior or lateral walls of the vagina. Colored dyes injected into the bladder will appear in the vagina shortly afterward. Retrograde cystograms are frequently disappointing in the information they give. Even though the dye may leak into the vagina through the fistula, the shadow of the bladder will usually overlie this area and the bladder may appear normal on the roentgenogram. Intravenous and retrograde pyelography will usually yield no information unless one of the ureters is involved. Cystoscopy is an essential diagnostic procedure and should be performed using both the foroblique lens for adequate examination of the urethra and the right angle lens for a careful inspection of the bladder.

Fistulas may be multiple or single. Two of our patients had multiple fistulas; the others single. In the urethrocystoscopic examination the following points are important: (1) number of fistulas, (2) size of fistula, (3) location of fistula, (4) appearance of bladder around the fistula, and (5) associated disease of the bladder.

In some cases of fistula the bladder is severely infected; in others the infection is limited to the area of the wall of the bladder about the fistula. As in other plastic surgical procedures, it is important that infection be eradicated prior to surgery. Extensive infection of the bladder usually occurs in obstruction of the lower part of the urinary tract, calculous disease, tuberculosis, or an infection in the upper part of the urinary tract. In some of these cases the associated disease is so advanced that the fistula of the bladder cannot be repaired, and it is necessary to resort to diversion of the urinary stream.

The majority of fistulas secondary to obstetric procedures and pelvic surgery occur in previously normal bladders, and cystoscopic examination may reveal a normal bladder except for the fistula and the area immediately adjacent. Many of these patients will have a normal urine or, at most, a urine with little evidence of infection. In these cases a small zone of infected tissue about the fistula poses no problem because it can be excised at the time of repair.

Fistulas which are secondary to carcinoma of the uterine cervix or irradiation therapy present a much more difficult or serious problem. Many of them will require diversion of the urinary stream. In clearing the infection preparatory to surgery, the antibiotic drugs and an indwelling catheter are usually sufficient. A small Foley catheter with a 5 cc. bag may be left indwelling for periods varying from several days

to several weeks. The small amount of edema in the mucous membrane of the bladder produced by the indwelling catheter is usually insufficient to interfere with either the surgery or healing.

In 1937 Thomson-Walker stated that he performed preliminary suprapubic cystotomy on patients with infection. Today he probably would use an indwelling Foley catheter instead.

The treatment of vesicovaginal fistula is surgical. Several temporary treatments are designed to keep the patient dry. As stated before, Ambroise Paré used a retinaculum; this probably kept his patient dry. Today the same goal may be accomplished in most cases with an indwelling urethral catheter. Haysmer used a nasal atomizer tip to occlude the fistula in order to fill the bladder with water during cystoscopic examination. Castallo[2] glued a mushroom catheter to a rubber diaphragm and by passing the stem of the catheter through the fistula, kept his patients with nonresectable lesions dry and comfortable. Reich and his colleagues have successfully treated small fistulas by simply fulgurating the lesion with a Bugbee electrode and draining the bladder with an indwelling Foley catheter for from ten to fourteen days.

Occasionally a vesicovaginal fistula may heal spontaneously. MacKay reported the case of a native of Rhodesia, Africa, who developed a vesicovaginal fistula during delivery in which treatment consisted only of trimming the edges. Sutures and an indwelling catheter were not used and healing was complete without further treatment.

TREATMENT

Proper treatment for most cases of vesicovaginal fistula is surgery. Surgical techniques today consist of (1) vaginal repair, (2) suprapubic or transvesical repair, (3) abdominal transperitoneal repair, (4) abdominal extraperitoneal repair, (5) combinations of any of the previous four, (6) diversion of the urinary stream from the upper portion of the urinary tract by bilateral ureterosigmoidostomy, cutaneous ureterostomy, or bilateral nephrostomy.

The vast majority of surgeons since Roonhuysen have approached the problem of repair of vesicovaginal fistula through the vaginal route. Counseller, Moon, and Taylor[9] have stated that 80 or 85 per cent of vesicovaginal fistulas can be successfully treated by surgery through the vagina. Even though Counseller favored the vaginal route, he admitted that some cases should be handled by other approaches. He preferred an abdominal approach for those patients in whom he believed that the fistula could be cured with one operation. Many surgeons use one of the three abdominal approaches and some, Twombly and Marshall, combine an abdominal with a vaginal approach. Some surgeons prefer the vaginal approach and postoperative drainage with a suprapubic catheter.

We have not pledged ourselves to any method but use all of them, including combinations. Figure 1 is a semidiagrammatic drawing showing some of the common fistulas between the bladder and the female generative tract. As a rule we use the vaginal route if the fistulas are below the posterior edge of the trigone of the bladder. However, if they are above this area, that is, on the posterior or lateral walls, our preference is an abdominal route, usually a combination of transvesical and extraperitoneal or transvesical and intraperitoneal approaches.

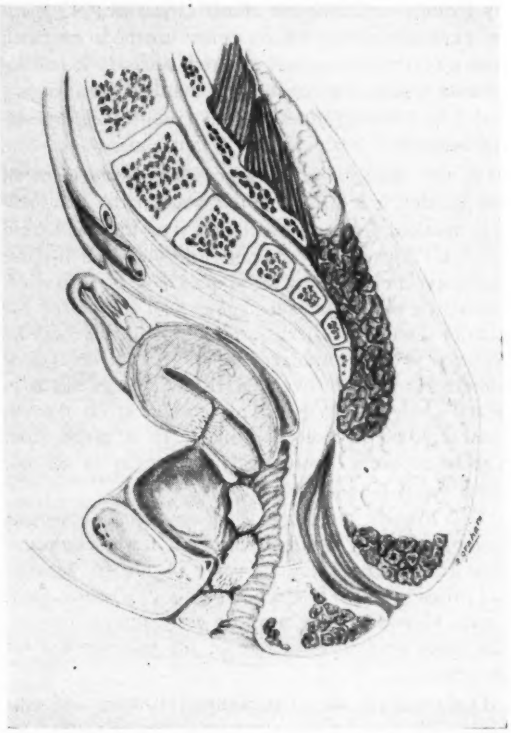

FIG. 1. Drawing of a sagittal section of the female pelvis illustrating some of the common types of vesical fistulas.

The route by which the surgeon approaches the fistula is not as important as strict adherence to certain important details of the technique of the repair. These are:

1. Wide separation of the bladder from the vagina.
2. Wide excision of the fistulous tract, both in the bladder and vagina.
3. Closure of both the vagina and the bladder in separate layers with a third layer of tissue interposed.
4. Adequate drainage of the bladder either by suprapubic or urethral catheter for a minimum of ten days postoperatively.

5. Proper use of antibiotic drugs to avoid infection.

6. Keeping the patient prone, lying on the abdomen for five days except for fifteen minutes twice a day when she may sit in a chair.

Surgical Techniques

If the fistulas are below the posterior edge of the trigone and the approach is through the vagina, we perform an anterior colpotomy, excising the fistula widely from the vaginal side. This incision is carried through the vagina, wide enough to secure a line of cleavage between the vagina and bladder. The two structures are separated from each other for a distance of 1 or 2 cm. The fistulous tract into the bladder is excised widely and the bladder wall closed with three layers of sutures. The first layer is a running suture of 000 plain catgut through the mucous membrane of the bladder. Cole advised against suturing through the mucosa because of the danger of calculous formation about nonabsorbed sutures. This complication has not been observed in our patients, however, probably because the urine usually is acidified beforehand. The next row of sutures is interrupted 0000 chromic catgut through the muscularis, and the third row interrupted 0000 chromic sutures through the perivesical fascia.

We try to interpose a layer of tissue between the bladder and the vagina, using any tissue in the vicinity that can be pulled into position. This layer is loosely sutured with interrupted chromic catgut. The vagina is then closed in one or two layers with interrupted chromic sutures. Usually the vagina is packed with gauze for thirty-six hours.

All surgeons agree generally that fistulas at the internal vesical orifice constitute a difficult problem. Excision may interfere with sphincteric action, but these lesions must be excised if cure is to be obtained. Sometimes special suturing of the sphincter muscle after excision is required.

In extremely large fistulas and in fistulas occurring on the posterior or lateral walls of the bladder, our preference is either the transvesical, intraperitoneal, or extraperitoneal approach, though frequently a combination of these is used. A combination of routes gives excellent exposure and enables excision of a wide segment of the bladder wall. When the extraperitoneal route is used, the surgeon can dissect the peritoneum off the posterior wall of the bladder and approach the fistula low on the posterior wall. In case the peritoneum can be dissected only with difficulty, we prefer the transperitoneal route, incising the peritoneum near its posterior reflection from the dome of the bladder and carrying the dissection down between the bladder and vagina. The fear formerly held concerning the role of urine in peritonitis is no longer justified and we do not hesitate to expose the peritoneum to infected urine except in tuberculosis of the bladder. The excision of the fistula and the suturing of the bladder and vagina are the same regardless of the surgical approach. In most cases postoperative drainage is with an indwelling urethral catheter, though in some of our patients a suprapubic catheter is used for a few days.

The large group of patients with vesicovaginal fistula secondary to carcinoma of the cervix, tuberculous cystitis, and a few other advanced lesions of the bladder usually possess badly damaged bladders which may be beyond the ability of a surgeon to repair. The fistula associated with carcinoma of the cervix is usually extremely large and the area of infiltration of the carcinoma is usually wide, making it difficult, if not impossible, to excise the fistula wall widely enough to obtain healthy tissue for suturing. After radium or other irradiation therapy, even with good screening, advanced fibrosis occurs within the bladder wall; this tissue is not suitable for plastic surgical procedures. Many clever operations have been designed to handle this problem, most of them using flaps and pedicle grafts from the wall of the bladder, vagina, or vulva.

Twombly and Marshall devised an ingenious technique for closing a large defect in the bladder with a flap of vaginal mucous membrane. Phaneuf interposed the uterus between the bladder and vagina; he also made free use of flaps and in some cases recommended the Garlock technique, a method which employs a pedicle flap from the Gracilis muscle. Frumkin wrote of his experiences with the Russian Army during the late war and reported the successful use of portions of the recti muscles to close large defects in the bladder.

Because of the damage to the structures involved, these grafts and flaps should be limited to selected patients. The more advanced cases with extensive damage to the bladder, urethra, and vagina should be treated by diversion of the urinary stream, the most desirable method being a bilateral ureterosigmoidostomy. New techniques for transplanting the ureters into the colon are published regularly and many of them give excellent results. For the past three years our own modification of the Davalos technique using ureteral catheters has been used. In our opinion the results with this procedure are better than those we have obtained by other methods.

The rectum may be badly damaged in some cases, necessitating a colostomy. Subjecting a patient to the risk of implantation of the ureters into the colon is not justified if a colostomy is necessary. The only advantage of a ureterocolostomy is the continence the patient will experience by being able to use the anal sphincter to control urination, and a colostomy certainly destroys this function. Therefore, in such in-

stances we prefer a bilateral cutaneous ureterostomy to divert the urine.

Borjas and Diaz[1] worked out an ingenious though complicated method of diverting the urine in their case of tuberculosis of the bladder with vesicovaginal fistula in a 14 year old virgin. Because of a tuberculous pyonephrosis of the left kidney, left nephrectomy was performed. The surgeons isolated the cecum and a portion of the ascending colon, suturing the ileum to the transverse colon and making an anastomosis. The appendix was brought out through the skin to serve as a urethra and the right ureter was implanted into the cecum, thereby making the cecum a urinary receptacle. It was hoped that the appendix by passing through the abdominal wall might have the benefit of sphincteric action. At the time of publication of the article, however, the patient had not learned to control the urine.

Bilateral nephrostomy may occasionally relieve an acute obstruction in the upper portion of the urinary tract, with the expectation of later providing some permanent diversion of the urinary stream.

CASE REPORTS

CASE 1.—Mrs. O. B. P., a 22 year old white woman, developed a vesicovaginal fistula during the instrument delivery of her third child eight weeks prior to first being examined by us. The obstetrician tried twice unsuccessfully to close the fistula.

Complete examination, including cystoscopy and urethroscopy, revealed a large vesicovaginal fistula about 4 cm. long extending from the posterior wall of the bladder through the center of the trigone to the internal vesical orifice. The mucous membrane of the bladder was acutely inflamed and edematous about 3 mm. from the edge of the fistula; the remainder of the bladder appeared normal. The upper part of the urinary tract was normal.

The abdominal wall was incised transversely and the fistula approached both transvesically and extraperitoneally on the posterolateral side of the bladder. The bladder and vagina were separated widely from each other by sharp dissection. The fistula was excised and both structures were closed in layers; a third layer of tissue was interposed between. Suprapubic catheter drainage was established; on the seventh day the suprapubic catheter was replaced by an indwelling urethral Foley catheter, which was left indwelling for two weeks. This woman remained well and healthy and the bladder was functioning normally twenty months after surgery.

CASE 2.—Mrs. T. H. H., a 37 year old white woman, had been passing urine from the vagina since an abdominal hysterectomy two months before. A complete examination, including cystoscopy and urethroscopy, revealed two small openings on the posterior wall of the bladder above the trigone slightly to the left of the midline. These openings were about a quarter of an inch apart and were surrounded by a narrow zone of red, inflamed, mucous membrane of the bladder. Dye injected into the bladder appeared promptly in the vagina. The upper part of the urinary tract was normal and the general physical examination revealed a healthy woman.

A vertical midline abdominal incision was made, excising the old scar. The approach was made transvesically and extraperitoneally by dissecting the peritoneum off the posterior wall of the bladder down to its base. The bladder was dissected from the vagina and the areas of fistula in both bladder and vagina were widely excised. These two structures were closed in layers and a third layer of tissue interposed. The bladder was sutured tight, and a urethral catheter was left indwelling for three weeks. The patient, in the eleventh postoperative month at last examination, considered herself cured.

CASE 3.—Mrs. J. H., a 21 year old white woman, was seen seventeen days after an abdominal uterine suspension and the repair of a rectocele and cystocele. The surgeon who performed the pelvic surgery stated that a few hours after the operation the patient was unable to urinate; upon catheterization more than 30 ounces of urine were withdrawn. For the next two or three days she was treated by intermittent urethral catheterization; about that time she noticed that she was unable to control the urine and was continually wet.

Examination revealed a palpable indurated area in the vagina which seemed to be the opening of a vesicovaginal fistula. An aqueous solution of 1 per cent methylene blue injected into the bladder appeared promptly in the vagina. Cysto-urethroscopy revealed a fistula on the posterior wall of the bladder above and medial to the left ureteral orifice, with a slight area of inflammation around the fistula. The rest of the bladder appeared normal.

Surgery was performed, using a transvesical and transperitoneal approach. The bladder was dissected from the vagina. The area of fistula was widely excised and the bladder and vagina were closed in layers with a third layer interposed. An indwelling Foley catheter was removed three weeks after the operation. At last examination, ten months since surgery, there had been no recurrence of the leakage of urine. The patient considered herself well and healthy.

CASE 4.—Mrs. S. J. H., a 71 year old white woman, was seen by us because of inability to control the urine. Since a vaginal hysterectomy ten weeks before, she had not been able to control her urine.

A complete examination, including cysto-urethroscopy, revealed two small openings in the bladder, one in the distal third of the trigone near the midline and the other at the internal vesical orifice. Both fistulas were surrounded by a slight area of inflammation. The remainder of the bladder was normal. The upper portion of the urinary tract was normal and the general physical examination revealed that the patient was in excellent health.

Surgery was performed, by the vaginal route. The patient was placed on her abdomen with marked flexion of the thighs in an exaggerated Kraske position. Good exposure of the anterior wall of the vagina was obtained. An anterior colpotomy was done and both areas of fistula were excised. The vagina, bladder, and urethra were separated from each other widely, care being taken to damage as little of the vesical sphincter as possible. The bladder and urethra, as well as the vagina, were closed in separate layers and a third layer of tissue was interposed between them. A gauze pack was left in the vagina for thirty-six hours. A urethral catheter was left indwelling. The patient was kept on her abdomen for five days except for fifteen minutes twice a day when she was in a chair or walking. The urethral catheter was removed three weeks after the operation. The patient had a little stress incontinence for about a week. Fourteen months after the operation she was apparently cured.

CASE 5.—Miss C. B., a 35 year old Negro woman, was admitted to the hospital because of inability to control the urine since an abdominal hysterectomy ten weeks before.

A complete examination, including cystoscopy and urethroscopy, revealed a large vesicovaginal fistula about 1 cm. in

diameter on the posterior wall of the bladder just behind the trigone near the right ureteral orifice. The opening into the vagina was in the anterior fornix.

The surgical approach was transvesical and extraperitoneal, extending the dissection down along the posterior wall of the bladder and reflecting the peritoneum. The bladder and vagina were separated from each other, the fistula excised, and the two structures closed in layers. Postoperative drainage with a suprapubic catheter was discontinued at the end of two weeks, and a Foley catheter was inserted and left indwelling for three weeks. Nine months after surgery the patient was asymptomatic and apparently well.

CASE 6.—Mrs. A. V. M., a 48 year old white woman, was seen by us because of severe pain in the region of the bladder, increased frequency of urination, recurring attacks of gross hematuria, and inability to control the urine; she also complained of passing gas and fecal material in the urine. Two years before a carcinoma of the cervix had been treated with radium, after which she had noticed increasing pain in the region of the pelvis, increasing frequency of urination, and pain and burning on urination. For the six months prior to examination she had had recurring attacks of hematuria. About three months later she began to pass gas and fecal material in the urine and through the vagina.

Complete examination revealed an emaciated white woman. The vagina was filled with urine and feces. Pelvic examination revealed what was believed to be a frozen pelvis, and a large fistula between the vagina and the bladder could be felt with the examining finger. Subsequent examination, including cystoscopy, urethroscopy, and roentgen studies, revealed a fistula between the lower bowel and the upper fornix of the vagina and between the loop of the sigmoid and the posterior wall of the bladder. Cystoscopy revealed a chronically infected bladder, a great deal of scarring, and markedly diminished urinary capacity. The upper portion of the urinary tract was uninvolved and appeared normal.

A colostomy was performed at the level of the upper sigmoid, then a suprapubic cystotomy. An attempt to close the vesicovaginal fistula failed. A suprapubic catheter was left indwelling.

During the next six months recurrent bladder stones formed; the suprapubic catheter gave a great deal of trouble, and the patient wanted something done about it. Because of her poor general condition and because of the permanent colostomy, a bilateral cutaneous ureterostomy was performed. The ureters were implanted to the skin low and on each side of the abdominal midline. French 8 catheters were left indwelling in the ureters.

The postoperative course was uneventful. Nephrostomy cups were attached to the skin with adhesive material. The patient did not like them and wanted to continue using the catheters.

Two and a half years after the operation the patient was still using the catheters. The colostomy was still present. The patient was in good health and had adjusted well to the cutaneous ureterostomy and colostomy. Since the consulting proctologist has stated that the colostomy will have to be permanent, we will not change the cutaneous ureterostomy.

CONCLUSIONS

Vesicovaginal fistula is usually a complication of pelvic surgery or malignant disease of the cervix. The cardinal symptom is inability to control the urine, the patient being unable to differentiate between fistula and incontinence. A preoperative cystoscopic examination is necessary before an intelligent evaluation of the problem can be made.

We recommend that fistulas below the posterior edge of the trigone be handled by the vaginal route and those on the posterior or lateral walls of the bladder by the abdominal route: either transvesically, extraperitoneally, transperitoneally, or by a combination of any of the three methods.

Fistulas resulting from malignant disease of the cervix or irradiation therapy frequently are associated with marked destruction of the bladder, and many of them will require diversion of the urinary stream, preferably by ureterosigmoidostomy.

Important points of the technique of surgical repair of vesicovaginal fistula are enumerated and discussed and 6 cases are briefly reviewed.

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Dr. O'Heeron, 901 Medical Arts Building.

American Board of Obstetrics and Gynecology

The American Board of Obstetrics and Gynecology has announced the location of its office in Cleveland, Ohio, effective August 10. All communications should be addressed to Dr. Robert L. Faulkner, Secretary-Treasurer, American Board of Obstetrics and Gynecology, 2105 Adelbert Road, Cleveland 6, Ohio.

Korea Wounded Receive Good Care

An average of 75 out of every 100 wounded men in Korea eventually return to duty, reports the Army Medical Department, 26 without leaving Korea, 35 without leaving Japan, and 14 after hospitalization in the United States. The death rate of wounded has been reduced to 2.5 per cent in contrast to 4.5 per cent in World War II. First aid in almost every case is given within thirty minutes.

In World War I, from 8 to 11 men per 100 who reached the most forward surgical hospital died. In World War II, the number of deaths was reduced to 4.5 per 100, and in the Korean conflict to 2.6 per 100. This reduction in the mortality rate in warfare is accredited by the Department of Defense to the increased use of plasma and whole blood.

CASE REPORTS

RETROCAVAL URETER

SAUL S. SAPSIN,* M.D., D.A.B.R., and MERLIN E. JACOBSEN,† M.D.
Big Spring, Texas

RETROCAVAL ureter has been regarded as a rather rare anomaly and has been just mentioned in the "Yearbook of Radiology," in the abstracts in the January issue of the *Journal of Radiology,* and in the *Urologic and Cutaneous Review.* It is therefore believed worth while to submit this case report and a short review of the literature and clinical findings in this condition.

John DeCarlo investigated and reported 11 cases of postcaval ureter from 1893 to 1928. From 1928 to 1941, 16 additional cases were reported. In 5 adult cases there was no evidence of hydronephrosis or hydro-ureter. In a survey of 4,185 autopsies, 17 men and 6 women were observed to have retrocaval ureter. This condition occurred from stillbirth to 84 years of age, and there was hydronephrosis in 16 and none in 7. Pick and Anson reviewed the work of other authors and noted an incidence of 1 case in 1,570 autopsies.

The anomaly of retrocaval ureter can occur in several manners. In nearly all cases postcaval ureter on the right side has been observed. Many patients with this condition apparently are asymptomatic and the diagnosis is not determined until autopsy. Apparently conditions such as pregnancy, age, a rigid aorta, or an aberrant right ovarian vein aggravate and accentuate retrocaval ureter and bring it to the attention of the patient. Ptosis of the kidney also can accentuate the condition and produce clinical symptoms. Dial reported on the incidence of retrocaval ureters associated with the aorta on the right side and the occurrence of the condition in cats and rabbits. The abnormalities that can be associated with retrocaval ureters are a double vena cava, retrocaval spermatic cord, retrocaval ovarian artery, postcaval ureter on the right side, and double inferior vena cava.

Forty-seven cases reported to date (March, 1951) with our case total 48 cases of which only 13 (including our own) have been diagnosed preoperatively.

The ureter describes a curve with the convexity toward the midline over the third or fourth lumbar vertebra in cases of retrocaval ureter. The dilated portion of the ureter is unusually long, suggesting obstruction in the upper third. In oblique and lateral views, the retrocaval ureter is more posterior than the normal ureter, except in cases of unilateral double vena cava in which the ureter passes between two veins. In a recent article Beard and Goodyear reported on a venogram of the vena cava obtained by injecting contrast substance into the right femoral vein while the ureteral catheter was in place. This procedure demonstrates the ureter passing medially and posteriorly to the vena cava.

Clinically, the symptoms and findings are referable to the upper genito-urinary tract, but from the etiologic standpoint, retrocaval ureter is the result of an abnormal persistence of the posterior cardinal vein. The clinical findings are practically always those of hydronephrosis, although Duff in 1950 reported a

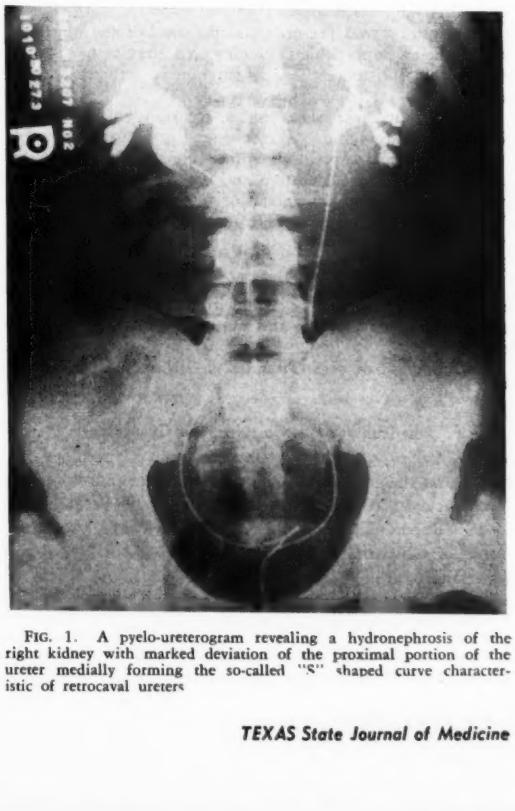

FIG. 1. A pyelo-ureterogram revealing a hydronephrosis of the right kidney with marked deviation of the proximal portion of the ureter medially forming the so-called "S" shaped curve characteristic of retrocaval ureters

*Chief, Radiology Service, Veterans Administration Hospital.
†Chief, Urology Section, Veterans Administration Hospital.
Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

case associated with a destructive pyelonephritis. The development of hydronephrosis in retrocaval ureter is similar to that seen in extrinsic pressure with kinking and angulation at the ureteropelvic junction due to anomalous vessels, except that in the former instance the extrinsic pressure is in the upper one-third of the ureter. The usual hydronephrosis at the ureteropelvic junction caused by an anomalous blood vessel produces evidence on the pyelogram which in many instances is indistinguishable from inflammatory contracture or intrinsic strictures from other causes. Ureteral obstruction and hydro-ureter seldom occur in the midportion of the ureter from intrinsic causes except in the case of neoplasms. The extrinsic factors are more prone to produce hydro-ureter at a point above the ureterovesical junction, and in this instance one would have to consider especially kinking or external pressure from nephroptosis, abdominal adhesions, retroperitoneal tumor, or anomalous blood vessels. It is in this latter group of conditions that retrocaval ureter should be considered as a possibility when associated with other definite observations which have been described by numerous authors. With adequate pyelograms the diagnosis should be made preoperatively in most instances if the condition is kept in mind.

CASE REPORT

J. W., a 23 year old Negro man, was admitted to the hospital September 15, 1950, for the treatment of duodenal ulcer, chronic appendicitis, and pyelonephritis. On admission he complained of pain in the right upper quadrant of the abdomen radiating to the right costovertebral area, which he had noticed for the previous eighteen months.

Careful study, including a gastrointestinal series, failed to reveal any evidence of duodenal ulcer. An intravenous pyelogram showed a right hydronephrosis and hydro-ureter in the upper one-third and a marked deviation to the midline of the ureter. The radiologist reported that this abnormality might be due to an anomalous blood vessel.

Genito-urinary examination October 13 revealed the following: The patient apparently was in good health. There was some right costovertebral tenderness. No mass was palpable in the right retroperitoneal area nor was there evident renal enlargement. A 16 catheter readily passed into the urinary bladder with no residual urine being obtained. The prostate was normal in size, shape, and consistency.

Urinalysis on admission was negative except for 10 to 12 pus cells per high power field. An intravenous pyelogram showed a moderate hydronephrosis on the right. A retrograde pyelogram showed moderately severe hydronephrosis on the right. The right ureter deviated sharply to the left in the lumbar region so that a portion of this structure was seen to overlie the spinal column. The psoas shadow on the right was only partially visible. Review of the film failed to show a mass in the right retroperitoneal region. Segregated urine cultures showed no growth from either kidney.

The diagnosis was right hydronephrosis due to extrinsic pressure on the proximal third to midportion of the ureter either from a retroperitoneal mass or postcaval ureter. An exploratory operation of the right kidney area and an air insufflation of the right perirenal area were recommended.

On October 16 perirenal air insufflation of the right kidney was done, injecting 500 cc. of air. Twenty-four hours later a right pyelo-ureterogram was made with anteroposterior and lateral views. The roentgenographic report was as follows: Perirenal air insufflation revealed the kidney to be slightly smaller than usual. No evidence of kidney tumor nor displacement of the kidney was visualized. The displacement of the ureter could be explained on the basis of an anomalous blood vessel or an anomalous relation of the ureter to the vena cava.

On October 20 a right flank incision was made; the kidney was located and observed to be somewhat atrophic and hydronephrotic. Marked hydro-ureter was present in the upper one-third. The ureter was dissected free and noted to be retrocaval. From the kidney pelvis, the ureter was noted to pass posterior to the vena cava and at the proximal third the ureter wound itself around the vena cava, became anterior to it, and continued on to the bladder.

The ureter was severed below its retrocaval position and the proximal portion freed by blunt and sharp dissection until it could be brought out from its retrocaval position. The middle third of the ureter was quite constricted, barely admitting a 5 catheter. Because of a rather small hydronephrotic kidney and a constricted ureter with marked hydro-ureter proximally, it was elected to do a nephrectomy. (Previous pyelography had shown the opposite kidney to be normal in size and function.) The distal end of the ureter was ligated 1 inch from the bladder through the same incision.

The excised kidney weighed 108 Gm.

The patient made an uneventful recovery and was discharged from the hospital November 6.

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NEWS

COMING MEETINGS AND CLINICS

Texas Medical Association, Dallas, May 4-7, 1952. Dr. Allen T. Stewart, Lubbock, Pres.; N. C. Forrester, 700 Guadalupe St., Austin, Acting Executive Secy.

American Medical Association, Los Angeles, Dec. 4-7, 1951. Dr. John W. Cline, San Francisco, Calif., Pres.; Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secy.

NATIONAL AND REGIONAL

American Academy of Allergy. Dr. Walter S. Burrage, Milwaukee, Pres.; Mr. James O. Kelley, 208 E. Wisconsin Ave., Milwaukee 2, Executive Secy.

American Academy of Dermatology and Syphilology. Dr. Donald M. Pillsbury, Philadelphia, Pres.; Dr. John E. Rauschkolb, 25 Prospect Ave., N. W., Cleveland 15, Secy.

American Academy of General Practice, Atlantic City, March 24-27, 1952. Dr. Jason P. Sanders, Shreveport, La., Pres.; Mr. Mac F. Cahal, 406 W. 34th St., Kansas City 2, Executive Secy.

American Academy of Neurological Surgery, Oct. 4-6, Houston. Dr. William S. Keith, Toronto, Canada, Pres.; Dr. T. C. Erickson, 1300 University Ave., Madison 5, Wis., Secy.

American Academy of Obstetrics and Gynecology, Business Meeting, Cincinnati, March 31-April 4, 1952. Dr. Woodard D. Beacham, New Orleans, Pres.; Dr. Ralph A. Reis, 116 S. Michigan Ave., Chicago 3, Secy.

American Academy of Ophthalmology and Otolaryngology, Chicago, Oct. 14-18, 1951. Dr. Derrick Vail, Chicago, Pres.; Dr. W. L. Benedict, 100 First Ave. Bldg., Rochester, Minn., Secy.

American Academy of Pediatrics, Toronto, Oct. 20-25, 1951. Dr. Paul W. Beaven, Rochester, N. Y., Pres.; Dr. E. H. Christopherson, 636 Church St., Evanston, Ill., Secy.

American Association for Thoracic Surgery, Dallas, May 8-10, 1952. Dr. Frank B. Berry, New York, Pres.; Dr. Paul C. Samson, 2938 McClure St., Oakland 9, Calif., Secy.

American Association of Genito-Urinary Surgeons. Dr. Charles C. Higgins, Cleveland, Pres.; Dr. Norris J. Heckel, 122 S. Michigan Ave., Chicago 3, Secy.

American Association of Obstetricians, Gynecologists and Abdominal Surgeons. Dr. James K. Quigley, Rochester, N. Y., Pres.; Dr. William F. Mengert, 2211 Oak Lawn Ave., Dallas, Secy.

American Cancer Society, New York, Oct. 25. Dr. Guy Aud, Louisville, Ky., Pres.; Mr. M. R. Runyon, 47 Beaver St., New York, Exec. Vice-Pres.

American College of Allergists. Dr. John H. Mitchell, Columbus, Ohio, Pres.; Dr. Fred W. Wittich, 423 La Salle Medical Building, Minneapolis 2, Secy.

American College of Chest Physicians, Chicago, June 5-8, 1952. Dr. Chevalier L. Jackson, Philadelphia, Pres.; Mr. Murray Kornfeld, 112 E. Chestnut St., Chicago 11, Exec. Secy.

American College of Physicians, Cleveland, April 21-25, 1952; regional meeting, New Orleans, Feb. 15-16, 1952. Dr. Maurice C. Pincoffs, Baltimore, Pres.; Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Secy.

American College of Radiology, Chicago, June 8, 1952. Dr. Robert R. Newell, San Francisco, Pres.; Mr. W. C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secy.

American College of Surgeons, San Francisco, Nov. 5-9, 1951. Dr. Henry W. Cave, New York, Pres.; Dr. Michael L. Mason, 40 E. Erie St., Chicago 11, Secy.

American Congress of Physical Medicine. Dr. Arthur L. Watkins, Boston, Pres.; Dr. Walter J. Zeiter, 2020 E. 93rd, Cleveland 6, Secy.

American Dermatological Association, Colorado Springs, April 23-26, 1952. Dr. Edward A. Oliver, Chicago, Pres.; Dr. L. A. Brunsting, 102 2nd Ave., S. W., Rochester, Minn., Secy.

American Gastro-Enterological Association. Dr. T. Grier Miller, Philadelphia, Pres.; Dr. Dwight L. Wilbur, 655 Sutter St., San Francisco, Secy.

American Gynecological Society, Hot Springs, Va., May 12-14, 1952. Dr. Walter T. Dannreuther, New York, Pres.; Dr. John I. Brewer, 104 S. Michigan Ave., Chicago, Secy.

American Hospital Association. Dr. Anthony J. J. Rourke, San Francisco, Pres.; Mr. George P. Bugbee, 18 E. Division St., Chicago, Executive Secy.

American Laryngological, Rhinological, and Otological Society, Toronto, May 20-22, 1952. Dr. C. S. Nash, 277 Alexander St., Rochester 7, N. Y., Pres. and Secy.

American Neurological Association. Dr. S. Bernard Wortis, New York, Pres.; Dr. H. Houston Merritt, 710 W. 168th St., New York 32, Secy.

American Ophthalmological Society, Hot Springs, Va., June 5-7, 1952. Dr. Lawrence T. Post, St. Louis, Pres.; Dr. M. C. Wheeler, 30 W. 59th St., New York 19, Secy.

American Orthopedic Association, London, June 30-July 4, 1952. Dr. Fremont Chandler, Chicago, Pres.; Dr. C. Leslie Mitchell, Henry Ford Hospital, Detroit 2, Secy.

American Pediatric Society. Dr. Hugh McCulloch, Chicago, Pres.; Dr. Aims McGuinness, 1740 Bainbridge St., Philadelphia 46, Secy.

American Proctologic Society, Milwaukee, June 4-7, 1952. Dr. R. A. Scarborough, San Francisco, Pres.; Dr. Stuart T. Ross, 131 Fulton Ave., Hempstead, N. Y., Secy.

American Psychiatric Association, Atlantic City, May 12-16, 1952. Dr. Leo H. Bartemeier, Detroit, Pres.; Dr. R. Finley Gayle, 6300 Three Chopt Rd., Richmond 21, Va., Secy.

American Public Health Association, San Francisco, Oct. 29-Nov. 2, 1951. Dr. W. P. Shepard, San Francisco, Pres.; Dr. R. M. Atwater, 1790 Broadway, New York 19, Secy.

American Society of Anesthesiologists, Washington, D. C., Nov. 5-8, 1951. Dr. Urban H. Eversole, Boston, Pres.; Dr. J. E. Remlinger, Jr., 188 W. Randolph St., Chicago, Secy.

American Society of Clinical Pathologists, Chicago, Oct. 15-20, 1951. Dr. F. William Sundermann, Atlanta, Ga., Pres.; Dr. Clyde G. Culbertson, Indiana University School of Medicine, Indianapolis, Secy.

American Surgical Association, White Sulphur Springs, April 16-18, 1952. Dr. Daniel C. Elkin, Atlanta, Pres.; Dr. Nathan Womack, University of Iowa, Iowa City, Secy.

American Urological Association, Atlantic City, June 23-26, 1952. Dr. Elmer Hess, Erie, Pa., Pres.; Dr. C. H. deT. Shivers, 121 S. Illinois Ave., Atlantic City, N. J., Secy.

Association of American Physicians and Surgeons, Indianapolis, Oct. 4-6, 1951. Dr. Lawrence Shinabery, Fort Wayne, Ind., Pres.; Mr. Harry E. Northam, 360 N. Michigan Ave., Chicago 1, Executive Secy.

International College of Surgeons, U. S. Chapter. Dr. H. W. Meyerding, Rochester, Minn., Pres.; Dr. Arnold S. Jackson, 1516 Lake Shore Drive, Chicago, Secy.

National Tuberculosis Association, Boston, May 26-30, 1952. Dr. Alton S. Pope, Boston, Pres.; Mr. Kemp D. Battle, 1790 Broadway, New York 19, Secy.

Radiological Society of North America, Chicago, Dec. 3-7, 1951. Dr. John S. Bouslog, Denver, Pres.; Dr. D. S. Childs, Medical Arts Bldg., Syracuse 2, N. Y., Secy.

Southern Medical Association, Dallas, Nov. 5-8, 1951. Dr. Curtice Rosser, Dallas, Pres.; Mr. C. P Loranz, 1020 Empire Bldg., Birmingham, Ala., Secy.

Southern Psychiatric Association. Dr. R. Burke Suitt, Durham, N. C., Pres.; Dr. Newdigate M. Owensby, Medical Arts Bldg., Atlanta, Ga., Secy.

Southern Surgical Association, Hot Springs, Va., Dec. 4-6, 1951. Dr. Frank C. Wilson, Birmingham, Ala., Pres.; Dr. John C. Burch, 2112 West End Ave., Nashville, Tenn., Secy.

Southwest Allergy Forum, Dallas, March, 1952. Dr. C. B. Shuey, Dallas, Pres.; Dr. James Holman, Medical Arts Bldg., Dallas, Secy.

Southwest Regional Cancer Conference. Secy., 209 Medical Arts Bldg., Fort Worth.

Southwestern Medical Association, El Paso, Oct. 18-20, 1951. Dr. L. W. Breck, El Paso, Pres.; Dr. W. W. Schuessler, 1415 First National Bank Bldg., El Paso, Secy.

Southwestern Surgical Congress. Dr. Leo J. Starry, Oklahoma City, Pres.; Dr. C. R. Rountree, 1227 Classen, Oklahoma City 3, Secy.

Tri-State Medical Assembly. Dr. W. S. Terry, Jefferson, Pres.; Dr. James Harris, Marshall, Secy.

United States-Mexico Border Public Health Association. Dr. Luis Arriaga Velez, Chihuahua, Mexico, Pres.; Dr. M. F. Haralson, 314 U. S. Court House, El Paso, Secy.

STATE

Texas Academy of General Practice, San Antonio, 1952. Dr. Van D. Goodall, Clifton, Pres.; Dr. B. H. Bayer, 104 E. Twentieth St., Houston, Secy.

Texas Academy of Internal Medicine, Galveston, Dec. 8-9, 1951. Dr. W. L. Marr, Galveston, Pres.; Dr. John S. Chapman, 3810 Swiss Ave., Dallas, Secy. Meetings restricted to members.

Texas Air-Medics Association. Dr. W. M. Pratt, Houston, Pres.; Dr. J. S. Minnett, 2512 Welborn, Dallas, Secy.

Texas Association of Obstetricians and Gynecologists, Austin, Feb. 8-9, 1952. Dr. S. Foster Moore, San Antonio, Pres.; Dr. Carey Hiett, 603 College Ave., Fort Worth, Secy.

Texas Chapter, American College of Chest Physicians, Dallas, May 5. 1952. Dr. J. E. Dailey, Houston, Pres.; Dr. Howard Smith, 3215 Exposition Blvd., Austin, Secy.

Texas Club of Internists. Dr. Ghent Graves, Houston, Pres.; Dr. Hatch W. Cummings, Jr., 203 Hermann Professional Bldg., Houston, Secy.

Texas Dermatological Society. Dr. W. H. Connor, Houston, Pres.; Dr. C. H. McCuistion, Capital National Bank Bldg., Austin, Secy.

Texas Diabetes Association, Dallas, May 4, 1952. Dr. D. W. Carter, Jr., Dallas, Pres.; Dr. Ivan Mayfield, 1312 Main, Lubbock, Secy

Texas Division, American Cancer Society, Fall, 1951. Mr. Frank C. Smith, Houston, Pres.; Mr. J. Louis Neff, 2307 Helena St., Houston 6, Executive Director.

Texas Heart Association, Dallas, May 5, 1952. Dr. Paul V. Ledbetter, Houston, Pres.; Miss Roberta Miller, 411 Reserve Loan Life Bldg., Dallas, Executive Secy.

Texas Hospital Association, Houston, May 20-22, 1952. Mrs. Ruby B. Gilbert, Temple, Pres.; Mrs. Ruth Barnhart, 2210 Main St., Dallas, Secy.

Texas Neuropsychiatric Association. Dr. David Wade, Austin, Pres.; Dr. James Blair, 1708 Nix Professional Bldg., San Antonio, Secy.

Texas Orthopedic Association, Dallas, May 5, 1952. Dr. G. W. N. Eggers, Galveston, Pres.; Dr. Margaret Watkins, 3629 Fairmount St., Dallas, Secy.

Texas Pediatric Society, Houston, Oct. 12-13, 1951. Dr. Thomas D. McCrummen, Austin, Pres.; Dr. M. C. Carlisle, 1410 Austin Ave., Waco, Secy.

Texas Public Health Association, Galveston, Feb. 17-20, 1952. Mr. Barnie A. Young, Austin, Pres.; Mr. Earle W. Sudderth, Dallas County Health Department, Court House, Dallas, Executive Secy.

Texas Radiological Society, Houston, Jan. 18-19, 1952. Dr. Curtis H. Burge, Houston, Pres.; Dr. R. P. O'Bannon, 650 Fifth Ave., Fort Worth, Secy.

Texas Railway and Traumatic Surgical Association. Dr. A. W. Hartman, San Antonio, Pres.; Dr. W. F. Parsons, First National Bank Bldg., Fort Worth, Secy.

Texas Rheumatism Association, Galveston, January 18, 1952. Dr. G. W. N. Eggers, Galveston, Pres.; Dr. Robert H. Mitchell, 210 Medical Arts Bldg., Fort Worth, Secy.

Texas Society for Mental Health, Fort Worth, March 6-7, 1952. Dr. Warren T. Brown, Houston, Pres.; Mrs. Elizabeth F. Gardner, 2504 Jarratt Ave., Austin 21, Executive Secy.

Texas Society of Anesthesiologists, Dallas, May, 1952. Dr. L. F. Schuhmacher, Jr., Houston, Pres.; Dr. Werner Hoeflich, 2301 Reba, Houston, Secy.

Texas Society of Gastroenterologists and Proctologists, Dallas, May 5, 1952. Dr. Carl G. Giesecke, San Antonio, Pres.; Dr. John S. Bagwell, Medical Arts Bldg., Dallas, Secy.

Texas Society of Ophthalmology and Otolaryngology, Austin, Dec. 7-8, 1951. Dr. Edward D. Dumas, San Antonio, Pres.; Dr. Lyle Hooker, 627 Esperson Bldg., Houston, Secy.

Texas Society of Pathologists, Dallas, Jan. 27, 1952. Dr. Stuart A. Wallace, Houston, Pres.; Dr. A. O. Severance, 205 Camden, San Antonio, Secy.

Texas Surgical Society, Fort Worth, Oct. 1-2, 1951. Dr. Edward White, Dallas, Pres.; Dr. Truman G. Blocker, 927 Strand, Galveston, Secy.

Texas Tuberculosis Association, San Antonio, April 18-19, 1952. Dr. David McCullough, Kerrville, Pres.; Miss Pansy Nichols, 208 E. Ninth, Austin, Executive Secy.

Texas Urological Society, Dallas, 1952. Dr. William H. Heck, San Antonio, Pres.; Dr. J. D. Mitchell, 1414 Medical Arts Bldg., Dallas, Secy.

DISTRICT

Second District Society. Dr. A. H. Daniell, Brownfield, Pres.; Dr. C. B. Knox, Jr., Seagraves, Secy.

Third District Society, Plainview, April 8-9, 1952. Dr. Pauline Miller, Lubbock, Pres.; Dr. James T. Hall, 1302 Avenue Q, Lubbock, Secy.

Fourth District Society, Brady, Nov. 14, 1951. Dr. S. Braswell Locker, Brownwood, Pres.; Dr. B. A. Hallum, Brady, Secy.

Fifth and Sixth Districts Society. Dr. E. King Gill, Corpus Christi, Pres.; Dr. Foy Moody, 1611 Fifth St., Corpus Christi, Secy.

Seventh District Society. Dr. George W. Tipton, Austin, Pres.; Dr. D. B. Faubion, 1403 C Guadalupe, Austin, Secy.

Eighth District Medical Society. Dr. Leonard Johnson, El Campo, Pres.; Dr. Robert Casey, Texas City, Secy.

Ninth District Society. Dr. F. Ray Black, Huntsville, Pres.; Dr. Lyman C. Blair, 1212 Rothwell, Houston, Secy.

Tenth District Medical Society. Dr. T. A. Fears, Beaumont, Pres.; Dr. J. M. White, Jr., 3149 Proctor, Port Arthur, Secy.

Eleventh District Society, Athens. Dr. Griff T. Ross, Mount Enterprise, Pres.

Twelfth District Society, Waco, Jan. 8, 1952. Dr. S. C. Richardson, Bryan, Pres.; Dr. J. C. Terrell, Stephenville, Secy.

Thirteenth District Society. Dr. R. L. Daily, Wichita Falls, Pres.; Dr. S. W. Wilson, Medical Arts Bldg., Fort Worth, Secy.

Fourteenth District Society, Greenville, June, 1952. Dr. N. L. Barker, Paris, Pres.; Dr. L. W. Johnston, 502 W. College St., Terrell, Secy.

Fifteenth District Society. Dr. C. B. Reed, Clarksville, Pres.; Dr. William E. Jones, 619 Main, Texarkana.

CLINICS

Dallas Southern Clinical Society, Dallas, March 17-20, 1952. Miss Betty Elmer, Medical Arts Bldg., Dallas 1, Executive Secy.

International Post-Graduate Medical Assembly of Southwest Texas, San Antonio, Jan. 22-24, 1952. Dr. John J. Hinchey, P. O. Box 2445, San Antonio, Secy.

New Orleans Graduate Medical Assembly. Dr. Woodard D. Beacham, Room 105, 1430 Tulane Ave., New Orleans 12, Secy.

North Texas-Southern Oklahoma Fall Clinical Conference. Wichita Falls. Dr. W. L. Powers, Hamilton Bldg., Wichita Falls, Chairman.

Oklahoma City Clinical Society Conference, Oklahoma City, Oct. 29-Nov. 1, 1951. Mrs. Muriel R. Waller, 512 Medical Arts Bldg., Oklahoma City 2, Executive Secy.

Postgraduate Medical Assembly of South Texas, Houston, July 21-23, 1952. Dr. C. A. Dwyer, Secy., 229 Medical Arts Bldg., Houston.

SOUTHWESTERN MEDICAL ASSOCIATION

The thirty-third annual meeting of the Southwestern Medical Association is being held in El Paso, October 18-20. Featured in the program are scientific assemblies, a business meeting, round-table discussions, luncheons, a banquet, and sight-seeing trips. A schedule of activities for the women including tours, a dinner-dance, cocktail party, and a style show-luncheon is planned.

The speakers and their subjects include:

DR. ELMER C. BARTELS, Department of Internal Medicine, Lahey Clinic, Boston: "Present Day Treatment of Hyperthyroidism," "Experience with Gout and Its Present Day Therapy," and "Obesity, Recrossing the Thirty-eighth Circumference."

DR. E. T. BELL, professor emeritus of pathology, University of Minnesota Medical School, Minneapolis: "Pathology of Glomerulonephritis," "Pathology of Lipoid Nephrosis and Tubular Diseases of the Kidneys," and "Pathology of Diabetes Mellitus."

DR. EDGAR BURNS, chairman of the Department of Urology, Tulane University School of Medicine, New Orleans: "Urologic Problems in Children," "Management of Bladder Neck Obstruction," and "Modern Treatment of Urinary Tract Infections."

DR. EDWIN H. ELLISON, associate professor of surgery, Ohio State University College of Medicine, Columbus: "Modern Treatment of Burns," "Indications for Surgery in Gallbladder Disease," and "Practical Aspects of Potassium Therapy."

DR. EDWARD H. REINHARD, assistant professor of internal medicine, Washington University, St. Louis: "Radioactive Isotopes in Diagnosis and Treatment of Malignant Neoplastic Diseases," and "Chemotherapy of Malignant Neoplastic Diseases."

DR. HERBERT E. SCHMITZ, professor of obstetrics and gynecology, Loyola University School of Medicine, Chicago: "Total Abdominal versus Vaginal Hysterectomy," "Treatment of Endometrial Carcinoma," and "Indications for Cesarean Section."

TEXAS ACADEMY OF GENERAL PRACTICE

The Texas Academy of General Practice, meeting in Houston on September 10 and 11, elected the following to office: Drs. Chester U. Callan, Rotan, president-elect; J. M. Travis, Jacksonville, vice-president; and B. H. Bayer, secretary-treasurer, re-elected. Dr. Van D. Goodall, Clifton, assumed the office of president.

Senator Wallace Bennett, Utah, substituted as a speaker for Senator Kenneth S. Wherry, originally scheduled to talk, who was ill. Among 1,122 registrants were 514 physicians. Dr. Leo J. Peters, Schulenberg, "General Practitioner of the Year of the Texas Medical Association," was present, and Dr. W. M. Campbell, Weatherford, the "oldest active general practitioner," aged 92 years, gave an oration.

The next meeting of the Academy will be in San Antonio.

MEDICAL EXAMINERS SCHEDULE TESTS

Examinations will be given by the Texas State Board of Medical Examiners on December 3, 4, and 5 at the Shamrock Hotel, Houston. Applications should be in the office of the secretary, Dr. M. H. Crabb, 1714 Medical Arts Building, Fort Worth, at least ten days prior to the date of the examination.

"Structure of a Tooth," upper left, is one of the 200 exhibits at the Dallas Health Museum. In the top center picture, Vic Klein, designer of exhibits, plans a model for an additional "man" to illustrate functioning of body organs. Upper right, the birth of a baby, depicted in mahogany brown figures, is part of the Museum's most popular series, "The Wonder of Life."

At lower left, children examine the famed transparent man made in Germany twenty-five years ago and insured for $25,000. Nerves and organs are illuminated as the "man" revolves and a voice explains the functioning of the parts. Lower center, Mrs. Marguerite Hays, director, and Mrs. Fred McCabe, organizer of the Museum Guild, examine the body book exhibit composed of slices of the head and torso revealing the internal organs. Facts about food are revealed in the three dimensional exhibit at lower right.

DALLAS HEALTH MUSEUM EDUCATES PUBLIC WITH GRAPHIC DISPLAYS

Five years ago the Dallas Health Museum was started with an idea and $20 in cash. As the Museum observed its fifth birthday September 17, the institution boasted 200 health exhibits, many of which are works of art produced in the Museum workshop.

The Dallas Health Museum is one of two such institutions devoted to health education of the public; the other is in Cleveland, Ohio. Records kept at the Museum during the past five years show that almost one million visitors, including public school classes, medical students, service organizations, and individual visitors, have observed the exhibits. The Museum, housed on the Texas State Fair Grounds, is open to the public free of charge seven days a week and is supported by private contributions.

According to Mrs. Marguerite Hays, Museum director, the most popular exhibit is the series called "The Wonder of New Life." Second in audience appeal is the transparent figure of a man that revolves on a pedestal, revealing through his plastic flesh the nerves and organs of the body. Another plastic "man" is under construction now in the Museum workshop. The model from which the figure will be cast is completed but construction of the figure has been halted because of lack of funds. Upon completion of this project, Museum officials hope to acquire a mate for the "man."

Mrs. Hays points out that exhibits done in three dimensions prove most effective. The exhibits with knobs, buttons, or switches add light, color, and action, and are popular because the visitor can participate in the exhibit.

In observance of the Museum's birthday the newly-organized Health Museum Guild, a woman's auxiliary to the Museum, presented a program on which a panel of experts discussed the use of narcotics among teen agers.

Trustees of the Museum believe that by the very nature of the project, the Museum will never be completed. Constant advances in science make it impossible for any one to finish his health education completely. To aid the public in keeping up with developments in science is the essential role of the Museum.

The executive committee consists of Homer R. Mitchell,

chairman; Harold F. Boss, vice-president; Dr. M. O. Rouse, secretary; R. L. Thomas, treasurer; and Dr. J. R. Maxfield, Jr., Travis Wallace, and R. W. Baxter.

Other members on the board are Ray C. Dixon, Arthur C. Hughes, Lewis B. Lefkowitz, Edward R. Maher, Gerald C. Mann, Dr. O. M. Marchman, Sr., Lloyd Messersmith, Ph. D., Charles R. Moore, William C. McCord, J. B. O'Hara, J. Frank Roark, D.D.S., Julius Schepps, C. A. Tatum, Mrs. Louis Tobian, Mrs. Wilfred F. Waters, J. Ralph Wood, Dr. J. Ross Woodul, D.D.S., Ben H. Wooten, and Jack Krueger.

University of Texas Medical Branch

Among recent visitors at the University of Texas Medical Branch were Dr. C. Gordon Rennick Sell, Johns Hopkins University, Baltimore, and Otto A. Bessey, Ph. D., professor of biochemistry, University of Illinois School of Medicine, Chicago.

Dr. A. E. Walker, neurosurgeon at the Johns Hopkins Hospital, Baltimore, delivered the James Greenwood Lecture in Neurosurgery at the Medical Branch on October 3. His topic was "Surgery of Involuntary Movement."

Clinical offices for psychiatric patients privately referred have been provided by the Sealy and Smith Foundation. These facilities also will be used for special teaching conferences at the Medical Branch.

Grants from the National Institutes of Health have been awarded to staff members of the Medical Branch for the following studies: C. M. Pomerat, Ph. D., $3,000, the role of ACTH in the formation of acellular fibrillar substances in vitro with special reference to the phenomenon of arthritis; Don W. Micks, Sc. D., $5,000, factors influencing the susceptibility of mosquitos to malarial parasites; Dr. W. D. Gingrich, $1,728, chemotherapy and immunology of avian and rodent malaria; and J. Allen Scott, Sc. D., and Dr. Etta Mae Macdonald, $5,670, studies on filiariasis by means of in vitro cultures.

Chauncey D. Leake, Ph. D., vice-president, and *Dr. George R. Herrmann,* director of Latin-American relations for the Medical Branch, attended the scientific congress held in connection with the celebration of the four-hundredth anniversary of the National Independent University of Mexico, Mexico, D. F., from September 24 to 30. Dr. Leake was one of five guests from the United States who contributed to the medical program. Dr. Herrmann also participated in the annual postgraduate course for Latin-American physicians sponsored by the National Institute of Cardiology of Mexico from October 1 to 14.

"BOSTON AGREEMENT" FOR BLOOD BANK PROGRAM

Representatives of the American National Red Cross, American Hospital Association, American Association of Blood Banks, and American Medical Association met in Boston on July 11 and 12, 1950, to consider the problems inherent in a cooperative blood bank program to serve the needs of the country in peace and war. The resulting agreement, the "Boston Agreement," follows:

"In the interest of a blood transfusion service throughout the country, and the doctors, hospitals, and patients who use blood, and in the interest of national unity, representatives of the American National Red Cross, the American Association of Blood Banks, the American Medical Association, and the American Hospital Association have agreed to cooperate in time of peace or in a national emergency with the National Security Resources Board in the following way:

"I. In time of peace:

a. That there be a free exchange of blood between the American National Red Cross Regional Blood Centers and blood banks operating under other auspices on a unit-for-unit basis whenever and wherever it is needed to best serve the interest of the community. It is agreed that such units shall become the property of the recipient blood bank to be used in accordance with its usual policy of issuing blood.

b. That, as a principle, the American National Red Cross, the American Medical Association, the American Association of Blood Banks, and the American Hospital Association favor making surplus blood available to the American National Red Cross or other agencies processing blood for the purposes of converting it into derivatives which will become available for the benefit of the people. By 'surplus blood' is meant all blood which is not required for use as whole blood, plasma, or any other derivatives by the blood bank concerned.

"II. In a national emergency:

In the event of a national emergency or a disaster, the American National Red Cross, the American Medical Association, the American Hospital Association, and the American Association of Blood Banks favor, in those communities not served by an American National Red Cross Regional Blood Center, the establishment of an American National Red Cross Blood Donor Center and/or the use of existing blood bank facilities to procure the necessary amount of blood. The method to be used shall be determined in a manner which meets the approval of the county medical society and the local blood banks and hospitals. Furthermore, it is agreed that, consistent with government regulations, the operation of the local blood bank facilities for civilian need shall not be interfered with by the emergency program.

"It is recognized and agreed that the use of standardized equipment and methods for the procurement and dispensing of blood is imperative in a national emergency and desirable in peace.

"In order to insure minimum standards, it is recommended that, subject to the resources of the National Institutes of Health, all blood banks cooperating in the above program shall meet the minimum standards of the National Institutes of Health."

SOUTHERN MEDICAL ASSOCIATION

Approximately 1,000 Texas physicians and more than that number from the other Southern states are expected to attend the forty-fifth annual meeting of the Southern Medical Association to be held in Dallas from November 5 to 8.

Dallas physicians are in charge of arrangements and reservations, and Dr. Frank A. Selecman, Dallas, is general chairman for the meeting. Accommodations are being handled through the Housing Bureau, Southern Medical Association, 432 Medical Arts Building. When writing to the Bureau, physicians should state the type and price of accommodations desired, names of persons to occupy the rooms, day and time of arrival, and the mode of transportation.

General functions of the meeting will include an opening assembly at which Dr. Charles L. Martin, president of the Dallas County Medical Society; Dr. John W. Cline, San Francisco, President of the American Medical Association; and Dr. Elmer L. Henderson, Louisville, a past president of the Southern Medical Association, immediate past president of the American Medical Association, and immediate past president of the World Medical Association, will speak. At an Association dinner November 7, Dr. Rosser will make an address, followed by a humorous entertainer. A grand ball will be held after the dinner.

The twenty-one sections of the Association include gen-

eral practice, medicine, gastroenterology, neurology and psychiatry, pediatrics, pathology, radiology, dermatology and syphilology, allergy, physical medicine and rehabilitation, industrial medicine and surgery, orthopedic and traumatic surgery, gynecology, obstetrics, urology, proctology, ophthalmology and otolaryngology, anesthesiology, medical education and hospital training, and public health. These sections will have forty-seven sessions.

Most of the activities of the convention, including the display of scientific and technical exhibits, will take place in the Baker and Adolphus Hotels. Section, alumni, and fraternity dinners are planned for Monday and Tuesday and luncheons of these groups will be held Tuesday and Wednesday. Motion pictures will be shown November 6 and 7.

Golf, trap, and skeet shooting tournaments have been planned.

The Southern Medical Association draws membership from sixteen states besides Texas. Any member in good standing of a county medical society is eligible for membership and to attend the Dallas session upon payment of $10 dues, which also covers subscription to the *Southern Medical Journal*. Scientific meetings and exhibits will be open to residents, interns, senior and junior medical students, technicians, and nurses.

Association for Research in Ophthalmology

In connection with the meeting of the Section on Ophthalmology and Otolaryngology of the Southern Medical Association, the Association for Research in Ophthalmology will have a dinner meeting Tuesday, November 6, at 7 p. m. in the Adolphus Hotel. Any physician wishing to attend may make reservations through Dr. A. E. Meisenbach, Medical Arts Building, Dallas.

The program for the dinner meeting will include the following speakers:

DR. E. NORRIS ROBERTSON, Oklahoma City.

DR. ALSTON CALLAHAN, Medical College of Alabama, Birmingham, Ala.

DR. PAUL A. CIBIS and DR. VICTOR A. BYRNES, Randolph Air Force Base, Randolph Field, Texas.

DR. EDMUND L. LECKERT and DR. JAMES H. ALLEN, Tulane University, New Orleans.

American College of Chest Physicians

Another group to meet during the Southern Medical Association session is the American College of Chest Physicians, Southern Chapter. Registration will take place November 4. In addition to the scientific sessions a combined luncheon and business session, an x-ray conference, a social hour, and the President's Banquet are planned. At the last-named function Dr. M. Jay Flipse, Miami, the President, will speak on "These Changing Times."

College of American Pathologists

The South Central and Southeastern Sections of the College of American Pathologists will meet conjointly with the Section on Pathology of the Southern Medical Association. A symposium and slide seminar on cytologic methods, a round-table discussion on cytology, and a symposium on medicolegal problems will comprise the scientific program.

Inter-City Urological Society

The Inter-City Urological Society, a group of urologists from north Texas and southern Oklahoma, will have its regular monthly meeting in the Dallas Athletic Club November 5 at 6 p. m.

After dinner a discussion of pyelograms will be held. Urologists attending the Southern Medical Association meetings are invited to attend this dinner meeting. Reservations may be made by writing Dr. Rex E. Van Duzen, 721 Medical Arts Building, Dallas 1.

POSTGRADUATE MEDICAL FACILITIES IN TEXAS

The current expansion of postgraduate medical facilities in Texas means that doctors of the state are finding it easier to keep abreast of the latest developments in medicine.

The University of Texas Postgraduate School of Medicine, with headquarters in Houston, is offering courses in Houston, San Antonio, San Angelo, Corpus Christi, and Temple. The Postgraduate Division of the University of Texas Medical Branch at Galveston has announced a comprehensive schedule of postgraduate work. Annual conferences in Dallas, San Antonio, Houston, Fort Worth, and Wichita Falls will be sponsored by local physicians. In 1952 through telephone broadcasts now projected by the Texas Medical Association, members of even the smallest and most isolated county society will benefit from the discussions of medical authorities, without the inconvenience or expense of journeying to medical centers or of asking medical experts to come to the society's meetings.

The need for the improvement, enlargement, and integration of medical study has been recognized by the Association with the creation of a Special Committee on Postgraduate Work, described in an editorial in this issue of the JOURNAL.

TELEPHONE BROADCAST COURSES

For the first time in Texas, medical programs will be broadcast by telephone during the early part of 1952. A monthly one hour program of postgraduate information, probably a panel discussion by medical authorities with a master of ceremonies, is being designed for broadcast at county medical society meetings at least during January, February, and March. Each program will originate at a central point in the state, and county societies or other medical organizations wanting to hear the broadcast, by tying in at the local long distance telephone office and using the proper amplifier, may receive the program at a place designated by the group at only the expense of tying on to the chain and of amplifying the sound.

The Special Committee on Postgraduate Work is surveying county medical societies to determine the night most appropriate for each broadcast and suggests that all societies conform to the night suitable for the majority. To complete its plans, the Committee would like the following information from each society: (1) whether or not the society wants to receive the broadcasts during the three months, (2) the meeting place and date of the society, and (3) the name of the official or committee designated to handle local details and to establish liaison with the Committee. This information should be sent without delay to N. C. Forrester, Acting Executive Secretary, Texas Medical Association, 700 Guadalupe Street, Austin.

Preliminary data including possible visual aids will be sent each county society before the broadcasts. Local discussion of the subjects will be possible after the telephone program.

REFRESHER COURSES IN GALVESTON

The Postgraduate Division of the University of Texas School of Medicine during 1951-1952 will sponsor a series of refresher courses in Galveston as follows:

Tumors of the Gastrointestinal Tract, October 30-November 1.

Pediatrics, November 26-30.

Traumatic Surgery, January 7-11.
Psychiatry for General Practitioners, February 4-8.
Tumors of the Skin and Maxillofacial Areas, March 3-6.
Obstetrics, April 7-11.
Pediatrics, April 15-17.

Co-sponsor of the tumor course is the John Sealy Hospital Tumor Clinic. Discussion will be concerned primarily with neoplasms of the gastrointestinal tract. Lectures, symposiums, round-table discussions, and case presentations will constitute the program.

Participants will include Dr. Matthew J. Stewart, professor of pathology, emeritus, University of Leeds Medical School, Leeds, England; Dr. John Floyd Holt, associate professor of roentgenology, University of Michigan School of Medicine, Ann Arbor; Dr. J. D. Martin, Jr., associate professor of surgery, Emory University School of Medicine, Emory University, Ga.; Dr. Paul North, chief of surgical services, Veterans Administration Hospital, McKinney; Dr. Charles Phillips, surgical pathologist, and Dr. C. A. Stevenson, chief of radiology, Scott and White Memorial Hospitals, Temple.

Further information and application forms for any of the refresher courses may be obtained from Dr. E. Ivan Bruce, Director, Postgraduate Division, University of Texas Medical Branch, Galveston.

In addition to the formal courses outlined, speakers on any specialty may be obtained from the clinical and preclinical faculty of the School for addresses to county medical societies.

COLLEGE OF PHYSICIANS COURSE IN CARDIOLOGY

A course in *cardiology* has been arranged by the American College of Physicians in conjunction with the University of Texas Medical Branch. Scheduled for December 10-15 in Galveston, the course is open to any physician. Application should be made through the executive office of the College, 4200 Pine Street, Philadelphia 4. Further details were published in the September JOURNAL (page 648).

POSTGRADUATE SCHOOL OF MEDICINE

For the coming year courses to be given by the University of Texas Postgraduate School of Medicine have been announced for Houston, San Antonio, San Angelo, Corpus Christi, and Temple. Still pending are courses for Austin, El Paso, and somewhere in the Panhandle. Further information concerning courses in all these cities may be obtained by writing the University of Texas Postgraduate School of Medicine, 207A Hermann Professional Building, Houston.

Houston

The schedule for courses in Houston is as follows:

Metabolism of Amino Acids, weekly beginning September 18, M. D. Anderson Hospital.

Obstetrics, weekly from September 12 through December 19, St. Joseph's Infirmary.

Common Diseases of the Eye, weekly from September 27 through October 23, St. Joseph's Infirmary.

Ear, Nose, and Throat, weekly from November 1 through December 13, excepting November 22 and 29, St. Joseph's Infirmary.

The details of three additional courses in common diseases of the skin, radiology, and office orthopedics, to begin in January, 1952, will be announced later.

San Antonio

During the current school year lecture courses in *trauma, pediatrics, obstetrics, modern therapeutics, dermatology, radiology, and physiology* will be given weekly, either on Tuesday or Friday evenings, at the Robert B. Green Memorial Hospital, San Antonio. Inquiries and application blanks may be addressed to Dr. James A. Bethea, Robert B. Green Memorial Hospital, 515 Morales Street, San Antonio.

As part of the professional program of the Robert B. Green Memorial Hospital, a *surgical seminar* was offered October 1-5 by the Brooke General Hospital surgical staff and consultants.

San Angelo

Two courses have been announced for the San Angelo Division of the University of Texas Postgraduate School of Medicine. Both courses, *diagnosis and treatment of heart disease in general practice* and *common pediatric problems of general practice,* are offered weekly from September 6 through March 6, with the exception of December 27. Both are held in the Shannon West Texas Memorial Hospital, San Angelo.

Corpus Christi

A course in *electrocardiography* began September 5 at Memorial Hospital, Corpus Christi, continuing weekly until November 14. Co-sponsor of this course is the Texas Academy of General Practice.

Temple

A four day postgraduate conference in *surgery of the gastrointestinal tract* will be presented by the Temple Division from March 24 to 27 in Temple. Topics to be treated are the esophagus, neoplasia of the stomach, peptic ulcer, lesions of the small bowel, neoplasia of the colon, intestinal obstruction, gastrointestinal lesions in the "acute" abdomen, and lesions of the rectum and anus.

POSTGRADUATE ASSEMBLIES

Helping to complete the picture of postgraduate medical education in Texas are the assemblies offered in the various parts of the state.

The Dallas Southern Clinical Society, which during September and October gave short courses in *cardiology* and *surgery,* is offering one in *diagnosis and therapy* December 10-12 and another in *obstetrics and gynecology* January 7-9. The Spring Clinical Conference will be held in Dallas, March 17-20.

The International Post-Graduate Medical Assembly of Southwest Texas will meet in San Antonio, January 22-24.

The North Texas-Southern Oklahoma Fall Clinical Conference, which held its 1951 meeting in Wichita Falls on September 19, will meet again in that city in 1952.

The Postgraduate Medical Assembly of South Texas, which met this past July in Houston, will convene again in that city July 21-23, 1952.

The Southwest Regional Cancer Conference, held this past September 13 in Fort Worth, will be sponsored again in that city in 1952.

PERSONALS

Dr. Charles H. Burnett, professor of internal medicine at Southwestern Medical School, Dallas, has assumed the position of professor of medicine at the University of North Carolina, Chapel Hill.

Dr. George N. Aagaard, who presently is director of postgraduate medical education at the University of Minnesota, Minneapolis, has been appointed dean of the Southwestern Medical School of the University of Texas, Dallas. He succeeds *Dr. Carl A. Moyer,* who resigned effective October 10. Until Dr. Aagaard reports January 1, *Dr. A. J. Gill,* who is associate dean and professor of pathology at the Medical School, will be acting dean.

Dr. James W. Hendrick, San Antonio, will be one of the principal speakers at the annual meeting of the American Society of Maxillofacial Surgeons in Chicago from Septem-

ber 23 to 26, according to *The Journal of the American Medical Association.*

Dr. L. E. Rosenblad, former Texas City physician who was called to active duty in the Army, was honored July 10 with "Dr. L. E. Rosenblad Night" by the citizens of Texas City and was given a traveling bag and a radio. The day before local and district members of the Optimist Club had honored him as one of the club's most active members, according to the Texas City *Sun.*

Dr. John E. Lattimore, who for twenty-eight years has served as the official doctor for the Waco public schools, resigned during July, reports the Waco *Tribune Herald.* He will continue in private practice in Waco.

Dr. Michael E. DeBakey, Houston, recently has been appointed as a member of the committee on surgery and of the committee on veterans medical problems of the National Research Council, also co-chairman of the subcommittee on vascular diseases.

Dr. Edwin L. Rippy, Dallas, has been elected to a three-year term on the Council of the American Diabetes Association.

Dr. Adolph Herff, retired physician of Boerne, was honored on his ninety-third birthday July 30 with a party at his ranch home sponsored by officials of the Sons of Hermann, the San Antonio *Express* reports.

Lt. Col. Edwin J. Pulaski, until recently director of surgical research at Brooke General Hospital, Fort Sam Houston, has been appointed the new assistant chief of the surgical service at Walter Reed Army Medical Center, Washington, D. C., and deputy director of the Center's newly organized division of surgery.

Dr. and Mrs. Foster Fuqua, Dallas, are the parents of a baby girl.

A girl was born recently to *Dr. and Mrs. V. A. Stembridge,* Galveston, states the University of Texas Medical Branch Alumni *Bulletin.*

San Antonio Tumor Seminar

The eighth annual San Antonio Tumor Seminar will be conducted by Dr. Matthew J. Stewart of Leeds, England, on October 27. Dr. Stewart, formerly a professor of pathology at the University of Leeds School of Medicine, is touring the world and visiting various parts of the English dominion; having recently been in Australia and New Zealand, he is en route to the British West Indies.

The seminar will begin at 9 a. m. at Brooke General Hospital. It will be of general interest, since case reports will not be confined to any one system or organ. At 7:30 p. m. cocktails and dinner will be served. Physicians interested in attending may write Dr. A. O. Severance, 205 Camden Street, San Antonio, for a box of slides and a copy of the case histories.

TEXAS CANCER COORDINATING COUNCIL

Seven persons attended the September 19 meeting in Houston of the Texas Cancer Coordinating Council. J. Louis Neff, Houston, executive director of the Texas Division of the American Cancer Society, reported on the cancer exhibit presented at the recent meeting of the Texas Academy of General Practice in Houston. The exhibit was sponsored by the Coordinating Council and prepared by the Cancer Society.

Mr. Neff made a progress report on a desk handbook describing the cancer program in Texas for the general practitioner, and the council reaffirmed its approval of the project, asking that a table of contents be prepared for its next meeting if possible.

The council approved the idea that an issue of the *Cancer Bulletin* with at least one article pertinent to the dental field be printed again this year and distributed to Texas dentists. Dr. William S. Brumage, Ausin, representative of the State Department of Health, said that it probably would be possible again for the Department to finance this project.

The council gave a unanimous vote of thanks to Russell W. Cumley, Ph. D., and the State Department of Health for the preparation of 50,000 copies of a Spanish version of the pamphlet "Self Examination of the Breast." Appreciation also was voted for the distribution of two books to tumor clinics and information centers in Texas by the State Department of Health.

A proposal of the American Cancer Society that amalgamation of the society's bulletin *CA* with the *Cancer Bulletin* to increase circulation was considered.

LIBRARY SECTION

PACKAGE SERVICE

The package library consists of collections of reprints and other periodical material on various subjects, prepared for lending to members of the Association. Request for packages should be addressed "Library, Texas Medical Association, 700 Guadalupe Street, Austin, Texas." Twenty-five cents in stamps should be enclosed with the request to cover postage and part of the expense of collecting the material. Packages are allowed to remain in the hands of the borrower for 14 days.

ACCESSIONS

The following additions were made to the Library during September:

Reprints received, 626.

Journals received, 262.

Books received, 25.

Technical Methods for the Technician, 4th edition, Anson L. Brown, Inc., Columbus, Ohio.

Obstetrical Practice, 5th edition, Beck; *Bacterial and Virus Diseases,* 2nd edition, Parish; *Textbook of Medicine,* 1st edition, Chamberlain; *Essentials of Modern Surgery,* 4th edition, Handfield and Porritt, editors, Williams and Wilkins, Baltimore.

Mycopathologia and Mycologia Applicata, vol. 5, fasc. 2-3, Ciferri and Redaelli, Dr. W. Junk, Hoitsema Bros., Holland.

The Changing Years, 1st edition, Doubleday and Co., Inc., Garden City, N. Y.

Forty-Second Annual Report, Letchworth Village, State Hospital Press, Utica, N. Y.

Health Program for Colleges, Third National Conference on Health in Colleges, National Tuberculosis Association, New York.

New and Nonofficial Remedies, Council on Pharmacy and Chemistry, A.M.A., Lippincott Company, Philadelphia.

Study Relating to Mental Illness, Mental Deficiency and Epilepsy in a Selected Rural Community, Eugenics Board of

North Carolina; *Manual of Eugenics Board of North Carolina,* Eugenics Board of North Carolina, Raleigh, N. C.

Outline of Lectures on Industrial Diseases, P. H. Pub. No. 115, Harry Heimann, Senior Surgeon, Federal Security Agency, Division of Industrial Hygiene, Washington, D. C.

Instruments and Apparatus in Orthopedic Surgery, Nangle; *Spitzer's Architecture of Normal and Malformed Hearts,* Lev and Bass; *Food and You,* Nasset; *Amenorrhea,* American Lecture Series No. 109, Randall and McElin; *Effects of Hormones Upon the Testis and Accessory Sex Organs,* American Lecture Series No. 110, Heckel; *Hormones and Body Water,* American Lecture Series No. 103, Gaunt and Birnie; *The Healing Touch,* Williams; *Roentgen Anatomy,* 1st edition, Steel, Charles C. Thomas, Springfield, Ill.

Surgery of the Stomach and Duodenum, Welch; *1951 Yearbook of Medicine,* Beeson, Yearbook Publishers, Chicago, Ill.

Textbook of Clinical Neurology, Nielsen, 3rd edition, revised and reset, Paul B. Hoeber, Inc., New York.

SUMMARY OF SERVICE

Local users, 45.	Borrowers by mail, 30.
Local packages, 22.	Packages mailed, 49.
Items borrowed, 402.	Film borrowers, 47.
Films loaned, 41.	

MOTION PICTURE FILM LIBRARY

Motion picture films on medical subjects, 16 mm., both silent and sound, some in color, and suitable for either medical or lay audiences, are available for loan to county medical societies, hospital staffs, or individual physicians, on request. Borrowers will be requested to pay only the cost of shipment of the films, by express, with insurance, and for any damage to films in the hands of the borrower.

Request for films should be addressed to "Motion Picture Film Library, Texas Medical Association, 700 Guadalupe Street, Austin, Texas." A list of available films with descriptions, will be furnished on request.

The following motion pictures were loaned by the Library during the month of September:

Anesthesia, Novocain, in Obstetrics (Winthrop Chemical Corporation)—Dr. C. G. Goddard, Bastrop.

Anesthesia, Regional (Winthrop Chemical Corporation)—Dr. V. M. Payne, Dallas.

Anesthesia with Vinethene (Merck and Company)—Dr. John T. Lowry, Laredo, and Dr. V. M. Payne, Dallas.

Aureomycin, The Versatile Antibiotic (Lederle Laboratories)—Dr. John T. Lowry, Laredo, and Eastland-Callahan-Stephens-Shackelford-Throckmorton Counties Medical Society, Eastland.

Back To Normal (British Information Services)—Dr. C. G. Goddard, Bastrop.

Breast Cancer: The Problem of Early Diagnosis (American Cancer Society)—Dilley Clinic Hospital, Dilley; Dr. John T. Lowry, Laredo; and Dr. V. M. Payne, Dallas.

Breast Self-Examination For Women (American Cancer Society)—Dilley Clinic Hospital, Dilley; Dr. V. M. Payne, Dallas; and Veterans Administration Hospital, Marlin.

Cancer: The Problem of Early Diagnosis (American Cancer Society)—Henderson County Medical Society, Athens.

Cervical Smear (Dr. Karl J. Karnaky)—Dr. V. M. Payne, Dallas.

Cesarean Section, A Low Cervical (Mead Johnson)—Dr. C. W. Schoenvogel, Brenham.

Coarctation of the Aorta, Surgical Treatment for (Dr. Philip Thorek)—Medical and Surgical Clinic, Laredo.

Coming Home (Texas Tuberculosis Association)—Grayson County Medical Auxiliary Program Committee, Sherman.

Diphtheria and Croup (Lederle Laboratories)—Dr. C. G. Goddard, Bastrop.

Dysmenorrhea, Primary (G. D. Searle and Company)—Dr. V. M. Payne, Dallas.

Edema—Cardiac and Renal (Winthrop Chemical Corporation)—Medical and Surgical Clinic, Laredo.

Eyelids, Surgery (Dr. Ray K. Daily)—Dr. John T. Lowry, Laredo.

Eyes For Tomorrow (Hurst Eye, Ear, and Throat Clinic)—Memorial Hospital Staff Meeting, Corpus Christi.

Feeding the Infant During the First Year (Mead Johnson)—St. Joseph Hospital Staff Meeting, Bryan.

Forty Billion Enemies (Westinghouse Electric and Manufacturing Company)—Grayson County Medical Auxiliary Program Committee, Sherman.

Gastroscopy, Role of, in Gastric Pathology (Harrower Laboratory)—Brackenridge Hospital School of Nursing, Austin.

Hemicolectomy for Carcinoma of the Right Side of the Colon (Dr. Philip Thorek)—Dr. V. M. Payne, Dallas.

Here's Health The American Way (American Medical Association)—McLennan County Medical Auxiliary Public Relations Committee, Waco.

Lesions of the Vulva, Vagina, and Cervix (Dr. Karl J. Karnaky)—Dr. V. M. Payne, Dallas.

Management of the Failing Heart (Varick Pharmacal Company)—Dr. John T. Lowry, Laredo.

Megacolon, Total Colectomy with Ileoproctostomy for Hirschsprung's Disease (Dr. Philip Thorek)—Dr. John T. Lowry, Laredo.

Nasal Sinusitis (E. Fougera and Company)—Memorial Hospital Staff Meeting, Corpus Christi.

On Our Own (National Foundation for Infantile Paralysis)—Grayson County Medical Auxiliary Program Committee, Sherman.

Polio—Diagnosis and Management (British Information Services)—Dr. V. M. Payne, Dallas.

Portacaval Shunt for Portal Hypertension (Dr. Philip Thorek)—U. S. Army Hospital, Fort Hood.

Ptosis, Operations for (Dr. Ray K. Daily)—Nueces County E.E.N.T. Society, Corpus Christi.

Resuscitation of the Newborn (Mead Johnson)—St. Joseph Hospital Staff Meeting, Bryan.

Roentgen Pelvimetry (Mead Johnson)—Dr. C. G. Goddard, Bastrop.

Sutures Since Lister (Johnson and Johnson)—Dr. V. M. Payne, Dallas.

Tb, This Is (Texas Tuberculosis Association)—Grayson County Medical Auxiliary Program Committee, Sherman.

They Also Serve (American Medical Association)—McLennan County Medical Auxiliary Public Relations Committee, Waco.

Transthoracic Esophageal Diverticulectomy (Dr. Philip Thorek)—Littlefield Hospital and Clinic, Littlefield.

Trichomonal and Monilial Vaginitis (G. D. Searle and Company)—Dr. C. W. Schoenvogel, Brenham.

Trichomonas Vaginalis and Leukorrhea (Dr. Karl J. Karnaky)—Littlefield Hospital and Clinic, Littlefield.

Urologic Conditions, Diagnosis of (Winthrop Chemical Corporation)—Littlefield Hospital and Clinic, Littlefield.

Uterosalpingography, Serial (E. Fougera and Company)—Littlefield Hospital and Clinic, Littlefield.

Varicose Veins and Their Complications (Becton, Dickinson and Company)—Scott and White Memorial Hospitals School of Nursing, Temple.

BOOK NOTICES

[1]Roentgen Manifestations of Pancreatic Disease

Maxwell Herbert Poppel, M. D., F.A.C.R., Associate Professor of Clinical Radiology, New York University—Bellevue Medical Center; Associate Roentgenologist, New York University Hospital; Associate Radiologist, Mount Sinai Hospital; Roentgenologist, Welfare Island Dispensary, New York. First edition. Fabrikoid, 380 pages. $10.50. Springfield, Charles C. Thomas, 1951.

In this book Dr. Poppel has presented in the greatest detail the procedures in diagnosis of a difficult and neglected problem, stressing and carefully describing the roentgen manifestations of diseases of the pancreas. He has ably presented the embryology, anatomy, and physiology of this organ so that the manifestations of disease may be better understood. He has particularly stressed the living anatomy as is only demonstrated by roentgen examination so that the changes from the normal, as demonstrated by pressure on the many surrounding organs, can be better understood and visualized. The great importance of a careful clinical examination and work-up, the importance of teamwork between the clinician and radiologist, and the importance of the radiologist's complete use of all clinical data and its correlation with roentgen findings so that an accurate diagnosis may be made are emphasized. The author points out the aid that can be derived from radiologic examinations of the surrounding organs and describes in detail the procedure for measuring the retrogastric space which he described several years ago.

This book is the most complete treatise on diagnosis of pancreatic disease available today, including all clinical phases though stressing the importance of the roentgen examination.

[1]*J. M. Brown, M. D., Marlin.*

[2]A Text-Book of X-Ray Diagnosis

S. Cochrane Shanks, M. D., F.R.C.P., F.F.R., Director X-Ray Diagnostic Department, University College Hospital, London; and Peter Kerley, M. D., F.R.C.P., F.F.R., D.M.R.E., Director, X-Ray Department, Westminister Hospital; Radiologist, Royal Chest Hospital, London. Second edition. Volume I. Cloth, 423 pages. $12. Philadelphia, W. B. Saunders Company, 1951.

This first volume of a four volume text on x-ray diagnosis deals with the head and neck. It is divided into the Central Nervous System, Teeth and Jaws, Eye, Accessory Nasal Sinuses, Ear, and Temporal Bone.

The authors have exhibited excellent judgment in their balance between a bare outline and an exhaustive treatise. They have included descriptions of technique which are applicable to the particular examinations discussed. The bibliographies are adequate. A systematic presentation of material makes information readily accessible. Descriptions are brief and pointed. The roentgenographic illustrations except for the chapter on teeth and jaws are reversed; this perhaps detracts somewhat from the value of the book to those physicians who may have difficulty in reversing images. In general, however, a nice balance between technique, description, and bibliography makes this a worth while textbook.

[2]*Vincent M. Ravel, M. D., El Paso.*

ORGANIZATION SECTION

OFFICERS OF THE ASSOCIATION

Biographical sketches of the men who serve as officers of the Texas Medical Association are presented for the benefit and information of the members. The President, Dr. Allan T. Stewart, Lubbock, was the subject of an article in the June, 1951, issue of the JOURNAL. The biographical sketch of the President-Elect, Dr. Truman C. Terrell, will be published in the June, 1952, JOURNAL.

Officers treated in this series are the Vice-President, Secretary, Treasurer, Speaker of the House, and Vice-Speaker-Elect of the House of Delegates. Officers who have been the subject of features in previous issues are the Trustees (September, 1951, JOURNAL) and the Councilors (March, 1951, JOURNAL).

Dr. Leslie Charles Powell, Beaumont, Vice-President of the Association, has served as councilor of the Tenth District and as president of Jefferson County Medical Society.

Officials of the Texas Medical Association, left to right, are Dr. L. C. Powell, Vice-President; Dr. Sam N. Key, Secretary; Dr. T. H. Thomason, Treasurer; Dr. Robert B. Homan, Jr., Speaker of the House of Delegates; and Dr. Hobart O. Deaton, Vice-Speaker-Elect.

A physician's son, Dr. Powell attended Southwestern University, Georgetown, and the University of Texas Medical Branch, Galveston, receiving his medical degree from the latter in 1919. After interning at John Sealy Hospital, Galveston, and serving a residency at Hotel Dieu Hospital, Beaumont, he entered general practice in Beaumont. Dr. Powell holds membership in the American Medical Association, Association of American Physicians and Surgeons, Texas Association of Obstetricians and Gynecologists, Texas Academy of General Practice, American Academy of General Practice, Postgraduate Medical Assembly of South Texas, Jefferson County Medical Society, and Tenth District Medical Society.

Dr. Powell served in the Student Army Training Corps in 1918, and during World War II he received the Selective Service medal. He is a member of the Presbyterian Church, Theta Kappa Xi medical fraternity, the Masonic Lodge, American Legion, Beaumont Chamber of Commerce, Knife and Fork Club, and the Gulf Coast Rod and Reel Club. He is a former president of the board of education of Beaumont Independent School District. The father of three children, Dr. Powell's hobbies are fishing and boating.

Dr. Samuel Newton Key, who has been practicing in Austin since 1914, is the newly-elected Secretary of the Association and is chairman of the Building Committee for the library and headquarters building now under construction.

A former University of Texas student, Dr. Key received his doctor of medicine degree in 1910 from the University of Texas Medical Branch, Galveston. After interning at Philadelphia General Hospital and serving a residency at Brooklyn Eye and Ear Hospital, Dr. Key began his private practice in diseases of the eye, ear, nose, and throat in Austin. He is certified by the American Board of Otolaryngology.

In addition to his present duties in the Association, Dr. Key has served as chairman of the Section on Eye, Ear, Nose, and Throat. He holds membership in the American Medical Association, Travis County Medical Society, the American College of Surgeons, American Academy of Ophthalmology and Otolaryngology, and Texas Society of Ophthalmology and Otolaryngology of which he was president in 1948. He served as president of the Travis County Medical Society last year. Dr. Key is a Methodist and a member of Town and Gown. His son also is a physician. Dr. Key's hobbies are sports and fishing.

Serving his second elective term as Treasurer of the Association is *Dr. Thomas Herbert Thomason,* Fort Worth surgeon.

Born in Huntsville, where he received his preliminary education, Dr. Thomason received a bachelor of arts degree from the University of Texas in 1916 and was graduated in medicine from Johns Hopkins Medical School, Baltimore, in 1920. He interned at Johns Hopkins Hospital and served a residency at Johnson Beall Hospital, Fort Worth. Dr. Thomason was associated with the Fort Worth Clinic and Beall Clinic before he entered individual practice in 1948. During World War I, Dr. Thomason served in the Student Army Training Corps in Baltimore and from 1938 until 1940 he was a lieutenant commander in the United States Naval Reserve.

Dr. Thomason is a member of the American Medical Association, Tarrant County Medical Society, American College of Surgeons, Texas Surgical Society, and Southwestern Surgical Congress, having served as president of the Texas Surgical Society (1943) and Tarrant County Medical Society (1945). He is certified by the American Board of Surgery. Dr. Thomason's scientific articles have been published in several medical journals.

He also holds membership in Phi Beta Kappa, Alpha Omega Alpha honorary medical fraternity, Delta Tau Delta fraternity, Nu Sigma Nu medical fraternity, River Crest Country Club, Fort Worth Boat Club, and the Methodist Church. In 1941 he was commodore of the Fort Worth Boat Club. In addition to his interest in sail boat racing, Dr. Thomason enjoys gardening. Dr. and Mrs. Thomason have two daughters. One brother, Dr. R. H. Thomason, Corpus Christi, also is a physician.

The Speaker of the House of Delegates, *Dr. Robert Broaddus Homan, Jr.,* El Paso, combines the role of physician, author, and business man. He is a doctor's son and is president of Homan and Crimen, Inc., operating Southwestern General Hospital, El Paso.

Dr. Homan attended the University of Texas, Austin, and was graduated from the Medical Branch, Galveston, in 1930. Since 1931 he has practiced in El Paso, specializing in diseases of the chest and thoracic surgery. Dr. Homan holds membership in the American Medical Association; El Paso County Medical Society; and Southwestern Medical Association. He served as vice-president of the state association in 1942 and is serving his second term as delegate from Texas to the American Medical Association. From his pen comes a monthly column published in *Southwestern Medicine,* journal of the Southwestern Medical Association and El Paso County Medical Society. Dr. Homan has been elected to fellowship in the American College of Surgeons, American College of Chest Physicians, Texas Surgical Society, and Southwestern Surgical Congress.

The Speaker's civic interests center around Texas Western College in El Paso and the Southwestern Sun Carnival Association of which he formerly was president and now serves on the board of directors. He is a member of the First Christian Church. Dr. and Mrs. Homan have one daughter.

Dr. Hobart Obil Deaton, Fort Worth, who was elected to the position of Vice-Speaker-Elect of the House of Delegates at the last annual session, is a native of North Carolina and has been engaged in general practice, medicine, surgery, and obstetrics in Fort Worth since 1927. He is a member of the staffs of St. Joseph, Harris Memorial, City-County, and Pennsylvania Avenue Hospitals.

The second child in a family of ten children, Dr. Deaton was graduated from Buie's Creek Academy in his home state in 1918 as president of his class. He took premedical training at Wake Forest College, Wake Forest, N. C., and at the University of North Carolina, Chapel Hill; attended the University of North Carolina Medical School; and in 1926 received his medical degree from Washington University, St. Louis. He interned at Vanderbilt University, Nashville. During World War I, Dr. Deaton served a year in the United States Navy as a seaman, second class.

A fellow of the American Medical Association, Dr. Deaton is a member of Tarrant County Medical Society, Northwest Texas District Society, Southern Medical Association, Texas Academy of General Practice, Phi Chi medical fraternity, and Alpha Omega Alpha honorary medical fraternity. He also is an elder in Hemphill Presbyterian Church and a member of Colonial Country Club. Dr. Deaton's hobbies include hunting, fishing, and golf, and he classifies himself as "a poor amateur violinist, but a good mountaineer fiddler." The Deatons are the parents of two sons.

1952 Annual Session Plans Evolve

The Council on Scientific Work, officers of the scientific sections, the Committee on Scientific Exhibits, and the Committee on General Arrangements have been going forward with arrangements for the 1952 annual session, to be held in Dallas, May 4-7. They would like to call attention to several items relative to this meeting.

Hotel reservations. The Adolphus Hotel, headquarters for the Association, and the Baker Hotel, headquarters for the Woman's Auxiliary, will accept reservations directly. All bedroom accommodations should be requested individually by those who expect to attend the meeting, but preference will be given to guests and officials. If neither the Adolphus nor the Baker can take care of a request, application for accommodations will be turned over to the Dallas Hotel Men's Association and the applicant will be assigned comparable quarters elsewhere. No advance deposit will be required. Dr. Andrew B. Small is chairman of the local Hotels Committee.

Scientific program. Section officers are arranging tentative programs to be approved by the Council on Scientific Work in January. Certain programs already are rapidly being filled, and any member of the Association who desires to submit a paper for consideration should do so at his earliest opportunity, writing directly to the appropriate section secretary. A list of section officers appears in the June issue of the JOURNAL (pages 417-418). Dr. Robert P. Glover, Philadelphia thoracic surgeon, and Mr. Arthur L. Conrad, president of the Heritage Foundation, former investigator for the Navy, and student of world affairs, have accepted invitations as guest speakers. A panel of Texas physicians to represent the various medical specialties at the clinical luncheon question and answer periods is being assembled.

Scientific exhibits. Space has been allocated for scientific exhibits in the Adolphus Hotel, adjacent to the technical exhibits, and Dr. J. D. Murphy, Medical Arts Building, Fort Worth, chairman of the Committee on Scientific Exhibits, will be glad to accept inquiries from those who wish to participate in the scientific display. Motion pictures for showing during the session should be called to the attention of Dr. Murphy also.

Luncheon tickets. The Executive Council approved a suggestion of the Council on Scientific Work that purchase of luncheon tickets be prerequisite to registration at the annual session. This procedure has become necessary because of failure of members of the Association to buy tickets sufficiently far in advance of meals to allow adequate planning by Association officials and hotel staffs. Although each member must buy his tickets before he can be registered, he can obtain a refund on them immediately or up to 6 p. m. of the day preceding a luncheon if he cannot attend the function; once his tickets are turned back, however, he cannot buy duplicates. The Council has asked the cooperation of all concerned in making this method of handling the luncheon arrangements work efficiently and to the advantage of member and management alike.

COUNTY SOCIETIES

Cass-Marion County Society

July 11, 1951

Marion T. Jenkins, Dallas, was guest speaker at the July 11 meeting of Cass-Marion Counties Medical Society in Hughes Springs. After a dinner with members of the auxiliary, the society met in the clinic of H. L. D. Jenkins, and the auxiliary adjourned to the home of Mrs. Jenkins for a meeting.

Eastland-Callahan-Stephens-Shackelford-Throckmorton Counties Society

July 17, 1951

Acute Head Injuries—Frederick H. Rehfeldt, Fort Worth.
Pelvic Evisceration—E. M. Cyrus, Jr., Fort Worth.

Members of Eastland-Callahan-Stephens-Shackelford-Throckmorton Counties Medical Society and Auxiliary met for dinner in Ranger on July 17, with thirty-five persons present.

After dinner the society heard the above program. The auxiliary, meeting separately at the home of Mrs. P. M. Kuykendall, held a short business session and games of bridge and canasta.

Gray-Wheeler-Hansford-Hemphill-Lipscomb-Roberts-Ochiltree-Hutchinson-Carson Counties Society

August 21, 1951

(Reported by Raymond W. Laycock, Secretary)

Case Report of Brachial Plexus Injury—J. Victor Ellis, Amarillo.
X-Ray Therapy as Applied to Skin Lesions (lantern slides)—W. Q. Budd, Amarillo.
Discussion—J. H. Vaughan, Amarillo.

Twenty-four members and guests of the Gray-Wheeler-Hansford-Hemphill-Lipscomb-Roberts-Ochiltree-Hutchinson-Carson Counties Medical Society attended the dinner meeting August 21 in Wheeler. The program outlined above was given.

H. M. Hamra, president, presided during the business meeting. S. B. 295 regarding the regulation of barbiturates, Blue Cross insurance hospitalization for members, and the tuberculosis mobile unit survey which is to be held the first week in September in Gray County were discussed.

Kerr-Kendall-Gillespie-Bandera Counties Society

August 13, 1951

(Reported by Dor W. Brown, Jr., Secretary)

Atomic Blast Injuries and Problems of Care—Col. Victor Byrnes, School of Aviation Medicine, Randolph Field.

Fifteen members and one guest heard a discussion of atomic blast injuries as indicated above when Kerr-Kendall-Gillespie-Bandera Counties Medical Society met August 13 in Kerrville. One physician from each county was appointed to a civil defense committee with Duan Packard, Kerrville, as chairman.

Approval of purchase of standard record forms recommended by the Texas Medical Association was voted.

The society heard a report by W. E. Gregg, Kerrville, on a plan for making a grievance committee effective, and it was agreed that the plan should be put in effect.

September 10, 1951

(Reported by Dor W. Brown, Jr., Secretary)

Resumé of Clinical Indications for Laboratory Tests and Their Interpretation—H. J. Schattenberg, San Antonio.

Members of the Kerr-Kendall-Gillespie-Bandera Counties Medical Society met in Comfort on September 10 and heard Dr. Schattenberg speak on the above-named subject. Twenty-five persons attended.

Blue Cross hospitalization for members was discussed. C. C. Jones, Sr., was honored as a charter member of the society; he is still in active practice.

Lubbock-Crosby Counties Society

September 4, 1951

(Reported by John B. Rountree, Jr., Secretary)

Neurosurgical Diseases: Diagnostic Aids, Treatment, and Surgical Procedures—Ronald Smith, Fort Worth.
Discussion—R. Q. Lewis, Sam G. Dunn, R. K. O'Loughlin, and J. Victor Ellis, Amarillo.

The Lubbock-Crosby Counties Medical Society met in regular session September 4 in Lubbock, with Mina D. Watkins, president, presiding. About forty members attended.

Ernest Nalle, Jr., and Millard Carnrick, Jr., were accepted as members by application. After discussion it was moved by Clyde F. Elkins, Jr., seconded, and carried (1) that the public relations committee sponsor the establish-

ment of a doctors' exchange for Lubbock, (2) that each member be authorized to join if he so desires, and (3) that the committee be authorized to list a telephone number in the new directory for emergency medical and surgical care.

F. B. Malone announced the October 27 tumor clinic of San Antonio and the next two annual sessions of the Texas Medical Association: Dallas in 1951 and Houston in 1952.

James T. Hall suggested that John C. Long, Plainview, be asked to help with the tumor clinic program this October. The details of the program were referred by the president to the program committee.

The above-mentioned program was given.

Randall-Deaf Smith-Parmer-Castro-Oldham Counties Society

August 31, 1951

(Reported by Roy J. Grubbs, Secretary)

Water Intoxication—Ben Wilson, Dallas.

At a special meeting in Hereford on August 31 Dr. Wilson spoke on the above topic. Several guests from the Veterans Administration Hospital, the nearby Air Force base, Parkland Hospital, Dallas, and the Potter County Medical Society were in attendance.

Tom Green-Eight County Society

September 4, 1951

(Reported by C. A. Kunath, Acting Secretary)

Intestinal Obstruction—Asher McComb, San Antonio.

About thirty members and visitors attended the September 4 meeting in San Angelo of the Tom Green-Eight County Medical Society. During his speech, the topic of which is stated above, Dr. McComb discussed the changes that occur in intestinal obstruction, particularly from the standpoint of pathologic physiology, due to the loss of electrolytes and body fluids and potassium depletion and nonoperative treatment by intestinal intubation. He described his experiences with various types of tubes, and his method of inserting the Miller-Abbott tube was the subject of most of the discussion which followed presentation of the paper.

The business meeting was conducted by the president, M. D. Knight. Jerome Smith, chairman of the military affairs committee, reported on recent developments in the procurement and assignment of doctors. The society approved the free examination by the city health officer, Clay Johnson, of school children employed in the school cafeterias, who are required by law to have health certificates.

Travis County Society

September 18, 1951

(Reported by John F. Thomas, Secretary-Treasurer)

The September 18 meeting in Austin of the Travis County Medical Society was confined to business matters. Besides reports from several of the standing committees, the treasurer, and the district councilor, J. M. Coleman, new members were introduced. Accepted by transfer were J. T. Shurley, Philadelphia County Medical Society; W. C. Gauntt, Hardin-Tyler Counties Medical Society; and Luther W. Ross, Taylor-Jones Counties Medical Society.

The public relations committee reported on the proposed opening September 24 of the society's blood bank. An extensive newspaper and radio campaign to publicize the blood bank is being conducted by the public relations committee.

AUXILIARY SECTION

TRANSACTIONS
STATE EXECUTIVE BOARD MEETING
September 26, 1951

The members and guests of the Executive Board of the Woman's Auxiliary to the Texas Medical Association met for luncheon at the Paris Golf Club, Paris, Texas, September 26, 1951, at 12 o'clock. The invocation was given by Mrs. John L. Pridgen, San Antonio.

Greetings were extended by the President, Mrs. O. W. Robinson, Paris. She also expressed her thanks to members of the Lamar County Auxiliary, introducing Mrs. Clarence Gilmore, president and general chairman; Mrs. M. A. Walker, registration chairman; and Mrs. O. R. O'Neill, chairman of the decorations committee, all of Paris.

The President introduced Dr. Allen T. Stewart, Lubbock, President of the Texas Medical Association; Mrs. Stewart; Mrs. R. F. Thompson, El Paso, President-Elect of the Woman's Auxiliary to the Texas Medical Association; Mr. W. E. Syers, Austin, public relations counsel of the Association; and Mrs. Lynita M. Baxter, Austin, representative of the central office of the Association.

Officers of the Woman's Auxiliary to the Texas Medical Association: President, Mrs. O. W. Robinson, Paris; President-Elect, Mrs. Robert F. Thompson, El Paso; First Vice-President (Organization), Mrs. V. M. Longmire, Temple; Second Vice-President (Physical Examinations), Mrs. John H. Woosters, Houston; Third Vice-President (Today's Health), Mrs. R. T. Travis, Jacksonville; Fourth Vice-Presidents (Program), Mrs. Cecil O. Patterson, Dallas; Recording Secretary, Mrs. E. W. Coyle, San Antonio; Treasurer, Mrs. John D. Gleckler, Denison; Corresponding Secretary, Mrs. Clarence E. Gilmore, Paris; Publicity Secretary, Mrs. A. H. Neighbors, Sr., Austin; Parliamentarian, Mrs. T. Herbert Thomason, Fort Worth.

The Board convened in regular fall session immediately after the no-host luncheon with the President, Mrs. Robinson, presiding. Fifty-two members and visitors were in attendance. Members repeated in unison the Auxiliary pledge. A welcome was extended by Mrs. Gilmore, president of the host county auxiliary and corresponding secretary of the State Auxiliary. The response was given by the immediate past State President, Mrs. William M. Gambrell, Austin.

Dr. Stewart expressed his appreciation of the work of the Auxiliary, giving a brief history of the organization. He emphasized four objectives of the Texas Medical Association: (1) completion of the new Association building, (2) an effective public relations program, (3) informed participation in the legislative field, and (4) cooperation in the civil defense program.

The President, Mrs. Robinson, then presented Mr. Syers, who brought greetings from Dr. Robert Kimbro, Cleburne, chairman of the Committee on Public Relations of the Association. He stressed the need for continued cooperation of the Auxiliary in four ways: (1) to be informed, (2) to inform the public, (3) to develop public relations locally, and (4) to be prepared to cooperate in the legislative program. Further, he asked for assistance in the long range program of the Association, emphasizing the need for a close relationship between each county auxiliary and its local advisory committee and cooperation in the nurse recruitment program and the local civil defense program.

Eight Past Presidents, presented by the President, responded with a brief greeting.

Mrs. R. F. Thompson, El Paso, State President-Elect, gave high lights of the June meeting of the Woman's Auxiliary

to the American Medical Association. She called attention to the complete account of the meeting in the August *Bulletin*.

Upon motion of Mrs. H. B. Williford, Beaumont, reading of the minutes of the last Executive Board meeting was omitted inasmuch as they had been approved by an appointed committee and had appeared in the July JOURNAL.

Announcement was made of the receipt of telegrams and other messages from Mrs. Paul Brindley, Galveston; Mrs. S. A. Collom, Texarkana; Mrs. W. R. Thompson, Fort Worth; Mrs. S. H. Watson, Waxahachie; Mrs. Malcolm McNatt, Marshall; Mrs. S. F. Harrington, Dallas; and Dr. E. H. Marek, Yoakum. Upon motion of Mrs. R. F. Thompson, El Paso, the Corresponding Secretary was instructed to send a telegram to Mrs. Watson, expressing regret that she could not be present because of illness and happiness at her improvement.

As a tribute to Mrs. Charles B. Alexander, San Antonio, Past President of the State Auxiliary, who died August 18, 1951, in San Antonio, members and guests of the Board stood in a moment of silent prayer.

With the First Vice-President, Mrs. V. M. Longmire, Temple, in the chair, the President reported on the suggested newsletter recommended at the Post-Convention Executive Board meeting in May. She brought information of newsletters in other states and advice received in conference with Dr. Stewart and with Dr. Merton Minter, San Antonio, Trustee of the Association. Upon motion of Mrs. A. B. Pumphrey, Fort Worth, it was voted not to issue a newsletter this year. Additional information as to the space and cost given by the JOURNAL for Auxiliary reports and news during the past year was given by Mrs. Baxter.

The President also called attention to the recommendation adopted at the Post-Convention Executive Board meeting in May to continue financial support of the "Healthy Living" radio programs and gave recent information concerning the project. After it was reported that approximately $685 is left in the University of Texas account from the $2,000 given by the Auxiliary and that about a two years' supply of the "Healthy Living" kits is on hand, it was voted, upon motion of Mrs. E. W. Coyle, San Antonio, that the Auxiliary withhold its financial help this year.

The President appointed the following committee to approve the minutes of this Executive Board meeting: Mrs. V. M. Longmire, Temple; Mrs. C. M. Covington, Orange; and Mrs. Herbert Hill, San Antonio.

Mrs. W. A. Lee, Denison, Council Woman of the Fourteenth District, presented to Mrs. Robinson a gift from the District in appreciation of her efficient leadership. Mrs. Robinson graciously accepted the gift, a silver compote.

With the First Vice-President in the chair, the President gave information concerning the need to return to the Association all in excess of $5,000 from the Auxiliary's Special Account. After discussion, upon motion of Mrs. W. Frank Armstrong, Fort Worth, it was voted to return to the Association as a gift $5,000 from the fund to use in the building program.

The President presented the suggestion of Dr. Milford O. Rouse, Dallas, chairman of the Council on Medical Education and Hospitals of the Texas Medical Association, that the Auxiliary might wish to contribute $250 toward the cost of the third of a series of telephone broadcasts designed for postgraduate training to be presented in March. Upon motion of Mrs. O. M. Marchman, Dallas, it was voted to contribute $250 for the program, which it is anticipated will celebrate the opening of the new Texas Medical Association building.

Stimulating reports of officers, council women, committee chairmen, and county presidents were given. Written reports were filed with the Recording Secretary.

Two resolutions adopted at the 1951 Convention of the Auxiliary to the A.M.A. were read by Mrs. P. R. Denman, Houston, Resolutions chairman, and were adopted upon her motion, with the recommendation that they be carried back to county auxiliaries for approval. One endorsed the American Medical Education Foundation and the other pledged continued efforts to defeat socialization of medicine.

Upon the suggestion of Mrs. Denman, members of the Executive Board and guests arose in appreciation to the President and to members of the Auxiliary to the Lamar County Medical Society for their hospitality.

The President introduced Mrs. Baxter, who brought information of the various services offered the Auxiliary by the central office of the Association. Briefly, they are (1) mimeographing and mailing, (2) library pamphlets, (3) motion picture film service, (4) National Education Campaign material, (5) newspaper clipping service, (6) program suggestions, and (7) information and kits for "Healthy Living" radio programs. Mrs. Baxter also stressed the value of having a staff member in the central office specifically to assist the State Auxiliary.

At her request and with the permission of the Board, the President's report was filed.

Following an invitation by the President to a social hour and dinner in her home, the meeting was adjourned.

MRS. E. W. COYLE, San Antonio,
Recording Secretary.

SOUTHERN MEDICAL AUXILIARY MEETING

The twenty-seventh annual meeting of the Woman's Auxiliary to the Southern Medical Association will be held in conjunction with the Association's annual session in Dallas, November 5-8. Registration will occur in the headquarters hotel, the Baker, from 10 a. m. to 4 p. m. November 5 and 6 and from 9 to 11 a. m. November 7. Mrs. L. S. Thompson, Dallas, President, will conduct the executive board meeting and breakfast the morning of November 6, and Mrs. V. Eugene Holcomb, Charleston, W. Va., President-Elect, the executive board meeting and breakfast the morning of November 8.

General meetings will be held November 6 at 10 a. m. and November 7 at 9 a. m. A tea will be given Tuesday, November 6, from 3 to 5 p. m. in the Mercantile National Bank Building penthouse and a luncheon at 1 p. m. November 7 at the Baker Hotel. Auxiliary members will attend the Southern Medical Association's dinner, entertainment, and grand ball the evening of November 7.

AUXILIARY NEWS

Hale-Floyd-Briscoe-Swisher Counties Auxiliary

Members of the Hale-Floyd-Briscoe-Swisher Counties Auxiliary entertained members of the society at a barbecue held at the Plainview Country Club on September 11. Thirty-five persons attended, and separate meetings of the society and auxiliary were held after the dinner.—Mrs. Howard H. Bess, Jr., Chairman of Public Relations.

Navarro County Auxiliary

The Woman's Auxiliary to the Navarro County Medical Society entertained with a family picnic at the Corsicana Country Club on August 10. On the social committee planning the food were Mmes. Opie Wills, W. R. Sneed, and J. W. David.

On September 8 the auxiliary met in regular session at the home of Mrs. Opie Wills with 12 members attending. A motion picture was shown by Mrs. Lila Rutherford, Navarro County Health Nurse, and plans were made for fall and winter programs.—Mrs. S. H. Burnett, Secretary.

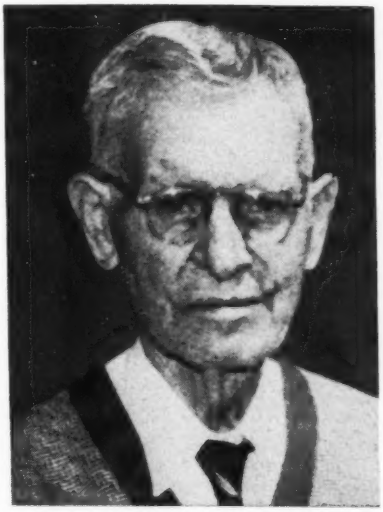
DEATHS

J. F. BUNKLEY

Dr. John Forney Bunkley, Seymour, Texas, died August 6, 1951, of heart failure.

Born October 1, 1862, at Greenville, Ala., he was the son of Beryl Forney and Sarah (Brewer) Bunkley. Dr. Bunkley was graduated in 1891 from the Kentucky School of Medicine, Louisville. After his graduation and until 1907 he practiced in Raynor, Haskell, Seymour, and Waco; then he returned to Seymour, where he practiced until his death.

A member of the Texas Medical Association and the American Medical Association through Baylor-Knox-Haskell Counties Medical Society, Dr. Bunkley served as president of the society in 1936. He was councilor of District 13 from



DR. J. F. BUNKLEY

1918 to 1924 and was elected to honorary membership in the Association in 1945. Dr. Bunkley was a Mason and had been a deacon in the First Baptist Church for forty-six years.

On March 15, 1887, in Farmersville he married Miss Margaret Jane Yeary, who preceded him in death July 21, 1948. Surviving Dr. Bunkley are two sons, Dr. T. F. Bunkley, Temple, and F. H. Bunkley, Seymour, and two sisters, Mrs. John T. Glass, McLean, and Mrs. Orby Randolph, Dallas.

J. D. BURT

Dr. Jefferson Davis Burt, Farmersville, Texas, died at his home August 24, 1951, of arteriosclerotic heart disease.

Dr. Burt, the son of James J. and Melinda Theodotia Burt, was born in Dawsonville, Ga., February 20, 1861. He attended North Georgia Agricultural and Military College, Daghlonega; and Louisville Medical College, Louisville; and received his medical degree from Emory University School of Medicine, Atlanta, in 1885. After interning in Atlanta, Dr. Burt moved to Blue Ridge, Texas, and then to Farmersville, where he practiced until 1944, when he suffered a slight stroke.

A member of the Texas Medical Association and the American Medical Association through Collin County Medical Society, Dr. Burt was elected to honorary membership in the state association in 1941 and served several times as president of the Collin County Medical Society. He was a Mason almost seventy years and a member of the Baptist Church for more than fifty years.

On January 11, 1893, in Whitewright, he married Miss Mattie Patterson, who died in 1900. He married Miss Ada Ann Stahl in Mansfield, December 12, 1916. Besides his wife, Dr. Burt is survived by two children, Bryan Burt, Dhahron, Saudi Arabia, and Mrs. L. E. Prewitt, Stamford, and four grandsons. Another daughter, Mrs. Clyde Lacy, died in 1930.

G. M. DUCKWORTH

Dr. Guilford Marvin Duckworth, Cuero, Texas, died August 3, 1951, in a hospital at Charlotte, N. C., of cirrhosis of the liver.

Dr. Duckworth was born October 8, 1877, in Brownsville, Tenn., the son of Dr. and Mrs. William Lafayette Duckworth. He obtained his preparatory education in Bellbuckle and Franklin, Tenn., and his premedical education at Vanderbilt University, Nashville, where he was associate editor of the school paper and a member of Kappa Sigma fraternity. He was graduated in medicine at Vanderbilt in 1901. Dr. Duckworth was interested in eye, ear, nose, and throat, and took postgraduate work in that field at Vanderbilt, the University of Berlin in Germany, a London hospital, the New York Eye, Ear, Nose, and Throat Hospital, the University of Pennsylvania in Philadelphia, and in Chicago.

DR. G. M. DUCKWORTH

An obituary ordinarily will not be published more than four months after date of death. Cooperation in reporting deaths of physicians and in furnishing appropriate biographical material promptly is solicited.

Later he was granted a degree in ophthalmology at the University of Colorado in Denver. First opening his practice in Pine Bluff, Ark., Dr. Duckworth in 1910 moved to San Antonio for his health. Since 1912 he had been in practice in Cuero, specializing in ophthalmology.

A member of the Texas and American Medical Associations through Bexar and later DeWitt Counties Medical Societies, Dr. Duckworth was president of the DeWitt society in 1931 and 1945. He was a fellow of the American College of Surgeons and a diplomate of the American Board of Ophthalmology. For many years he was a local specialist for the Southern Pacific Railroad. During World Wars I and II, he served on the Medical Advisory Board for DeWitt County. Dr. Duckworth was a member of the Methodist Church and had served the Cuero church in an official capacity throughout his residence there. He was a member of the Knights of Pythias, Masonic Lodge, Scottish Rite, and Shrine and a former member of the Rotary Club.

Surviving Dr. Duckworth is his wife, the former Miss Brockie Sale of Covington, Tenn., whom he married in December, 1907, and one brother, Pearce Duckworth, Brownsville, Tenn.

F. M. PATTON

Dr. Foster McKenzie Patton, Henrietta, Texas, died July 12, 1951, in a Wichita Falls Hospital of cancer of the prostate.

Born January 11, 1878, in Hillsboro, Dr. Patton was the son of W. L. and Eliza (Wardlow) Patton. He received his preliminary education at Jacksboro and taught school near Antelope before entering medical school. He was graduated in 1915 from the Medical Department of Texas Christian University and interned at City-County Hospital, Fort Worth. Dr. Patton practiced in Shannon, Bowie, and Bluegrove. With two other physicians, he organized the Bowie Clinic Hospital. In 1937 he moved to Henrietta, where he practiced until his death. Dr. Patton was a staff member of Clay County Memorial Hospital and served for ten years as county health officer of Clay County. While in the Medical Corps of the United States Navy, Dr. Patton served on Guam for seven and one-half years and spent six months in the Philippine Islands.

A member of the American Medical Association and the Texas Medical Association through Clay-Montague-Wise Counties Society, Dr. Patton served twice as president of the society. He was a member of the Methodist Church and Phi Chi medical fraternity.

On March 24, 1911, in San Antonio, he married Miss Nellie Carnes, who preceded him in death July 18, 1946. Survivors are two daughters, Mrs. Foncie McCurley, Fayetteville, N. C., and Mrs. Charles L. Koethe, Henrietta; two sons, Pat C. Patton, Wichita Falls, and Edd C. Patton, Henrietta; two brothers, Edd Patton, Santa Ana, Calif., and Alvin Noble Patton, Houston; four sisters, Mrs. Dan Aynes, Wichita Falls, Mrs. Sam Mower, Antelope, Mrs. Maud Copeland, Shannon, and Mrs. Noal Johnson, Corpus Christi; and several grandchildren and great grandchildren.

A. S. EPPERSON

Dr. Albert S. Epperson, Houston, Texas, died August 17, 1951.

Born near Burton, Washington County, August 10, 1869, Dr. Epperson was the son of R. S. and Elizabeth (Bowers) Epperson. Dr. Epperson attended public schools and studied two years at Old Soule College, Chapel Hill. He was graduated in 1893 from Tulane University, New Orleans, and settled in Burton, where he practiced for ten years. In 1903 Dr. Epperson moved to Cameron, where he was engaged in general practice until 1940. He was on the staff of the Cameron Hospital and taught classes of student nurses for twenty-five years. Dr. Epperson was a member of the Texas Railway and Traumatic Surgical Association, having served as surgeon for Houston and Texas Central Railway in Burton, and Santa Fe and Southern Pacific Railways in Cameron. He was city health officer of Cameron for fourteen years.

Dr. Epperson was a member of the American Medical Association and the Texas Medical Association through Milam County Medical Society, of which he was a charter member. He was elected to honorary membership in the state organization in 1946. He was a member and former secre-

DR. FOSTER M. PATTON

DR. A. S. EPPERSON

tary of the old Brazos Valley Medical Society. Chairman of the Cameron School Board for fifteen years, Dr. Epperson also held membership in the Methodist Church, Masonic Lodge, Woodmen of the World, and Sons of Hermann Lodge.

On December 12, 1894, he married Miss Minnie Stewart of Brenham. After the death of his wife in 1938, Dr. Epperson retired from general practice and moved in 1940 to Houston, where he married Mrs. Jesse Watson, who survives. Other survivors are his five sons, A. R. Epperson, Austin; A. T. Epperson, Houston; L. J. Epperson, Midland; R. S. Epperson, Lubbock; and B. B. Epperson, Port Arthur; one granddaughter; four grandsons; and two great grandsons.

X. R. HYDE

Dr. Ximie Richard Hyde, Fort Worth, Texas, for eleven years chairman of the Committee on Scientific Exhibits of the Texas Medical Association, died at his residence July 21, 1951.

Dr. Hyde was born November 27, 1892, at Sulphur Springs, the son of John T. and Georgia Hyde. He attended public schools in Sulphur Springs; took his premedical training at Burleson College, Greenville; and in 1915 was graduated from the Medical Department of Texas Christian University. Called to active service in the National Guard his senior year, Dr. Hyde served on the Texas-Mexico border during the campaign against Pancho Villa. He began his medical practice in Dodson, Collingsworth County, where he engaged in general practice for five years. He then took graduate training in radiology at Loyola University, Chicago, and became affiliated with the radiology department at St. Bernard's Hospital in that city. Later he returned to Loyola as an instructor.

DR. X. R. HYDE

In 1925 Dr. Hyde returned to Fort Worth to specialize in radiology, and he served as chief of the department of radiology of City-County Hospital for more than twenty years. He was a diplomate of the American Board of Radiology, a fellow of the American College of Radiology, and a member of the Radiological Society of North America, the Rocky Mountain Radiological Society, Texas Radiological Society, of which he had been secretary and president, and the Dallas-Fort Worth Inter-City Radiological Society, which he helped to organize. He also served as secretary of the National Physicians Committee in Texas.

A member of the American Medical Association and the Texas Medical Association through Tarrant County Medical Society, Dr. Hyde served the state organization as chairman of the Section on Radiology in 1934; vice-president in 1947; and chairman of the Committee on Scientific Exhibits since 1940. He had held the offices of secretary and president of the Tarrant County Society, and he also was a member of the Thirteenth District Medical Society. A Rotarian, Mason, and Baptist, Dr. Hyde was a member of Phi Chi medical fraternity.

On July 2, 1919, in Wellington, he married Miss Kate Marie Dodson, who survives. Dr. Hyde's other survivors include his two daughters, Mrs. Kelly Shryoc and Mrs. William Dwight Dobson, Jr., Fort Worth; his mother, Mrs. J. T. Hyde, Dallas; a brother, J. D. Hyde, D.D.S., Dallas; and one grandchild.

E. SMITH

Dr. Edward Smith, Waco, Texas, died August 12, 1951, in a Waco hospital of arteriosclerosis and bronchial pneumonia.

The youngest son of thirteen children, Dr. Smith was born August 10, 1875, in Fredonia, Ala., the son of David Edward Marion and Catherine Amanda Smith. As a rural school teacher, he worked his way through college, receiving a degree in pharmacy and a bachelor of science degree from Valparaiso University, Indiana. In 1911 he was graduated from Chicago College of Medicine and Surgery. Dr. Smith took postgraduate work in New York and New Orleans and studied at Mayo Clinic, Rochester. He interned at Cook County Hospital and spent eight months as intern with United States Steel Company, Gary, Ind. From 1911 until 1946 he practiced in Waco, retiring in 1946 because of ill health.

DR. E. SMITH

Dr. Smith was a member of Texas Medical Association and the American Medical Association through McLennan County Medical Society. In 1950 he was elected to honorary

membership in the state Association. He served in the armed forces during World War I. A thirty-second degree Mason, member of the Christian Church, and member of the American Legion, Dr. Smith also was water commissioner and a member of the board responsible for the planning and construction of Lake Waco. He was a member of Phi Delta fraternity.

On November 9, 1913, in Mena, Ark., Dr. Smith married Miss Myrtle Alice Proctor. He is survived by Mrs. Smith; a great niece, Mrs. W. W. Mahan, Jr., Detroit, Mich., who was reared in the Smith home; and one sister, Mrs. Ada Jones, Ellabell, Ga.

E. G. MATHIS

Dr. Edgar Gordon Mathis, Corpus Christi, Texas, died at his home September 2, 1951, of adenocarcinoma.

Dr. Mathis was born January 20, 1882, in Rockport, the son of Thomas Henry and Mary Jane (Nold) Mathis. He received his academic education at Rockport Public Schools and Bingham Military Academy, Asheville, N. C., and received his medical degree from the University of Texas Medical Branch in 1903. Dr. Mathis served an internship at John Sealy Hospital, Galveston, and later practiced in Manor, Taft, and Austin before moving in 1919 to Corpus Christi. During World War I, Dr. Mathis served as a captain in the United States Army Medical Corps.

A member of the Texas Medical Association and the American Medical Association for many years through Travis, San Patricio, and Nueces County Medical Societies, Dr. Mathis was elected to honorary membership in the state association in 1951. He served as secretary of the Section on Eye, Ear, Nose, and Throat in 1922. A former president and secretary of the Nueces County Medical Society, Dr. Mathis also held these offices in the Nueces County Eye, Ear, Nose, and Throat Society. He was a member of the Sixth District Medical Society, the Southern Medical Association, Texas Air Medics Association, and Phi Chi medical fraternity. Dr. Mathis served as a trustee of the Corpus Christi schools for six years, was post commander of the American Legion, a member of the Kiwanis Club, a Mason, and an elder of the First Presbyterian Church.

Dr. Mathis married Miss Bessie Caperton in Austin on August 2, 1909. Survivors are his wife; three sons, Edgar G. Mathis, Jr., Sour Lake; Thomas H. Mathis, Corpus Christi; and Harry D. Mathis, United States Army; two daughters, Miss Juliet Mathis, Austin; and Mrs. T. R. Brannen, Dallas; a brother, Thomas E. Mathis, San Antonio; and a sister, Mrs. Lloyd Harvey, Corpus Christi.

F. G. SANDERS

Dr. Frank G. Sanders, Fort Worth, Texas, died September 7, 1951, of acute leukemia.

A Mississippian by birth, Dr. Sanders spent some time as a druggist in Indian Territory. He was graduated in 1909 from the Fort Worth School of Medicine and took postgraduate work at Detroit School of Medicine and the University of Texas Medical Branch. During World War I, he served in the Army Medical Corps in France. Dr. Sanders was on the staffs of St. Joseph, City-County, All Saints, and Pennsylvania Avenue Hospitals. Recently he was cited for long and distinguished service to City-County Hospital.

A member of the American Medical Association and Texas Medical Association for many years through Tarrant County Medical Society, Dr. Sanders served as president of the society in 1944 and was secretary for several years. He was a member of the Episcopal Church, the Masonic Lodge, the Dallas Consistory of Scottish Rite Masons, the Benevolent and Protective Order of Elks, and was an honorary life member of Glen Garden Country Club.

Dr. Sanders is survived by a niece, Mrs. Richard R. Gorton, Fort Worth, with whom he made his home; a nephew; and a sister-in-law.

H. C. FEAGIN

Dr. Horace Cecil Feagin, Houston, Texas, died at his home July 28, 1951.

Dr. Feagin was born April 20, 1885, in Livingston, the son of Judge and Mrs. J. C. Feagin; his father was a state circuit court justice. He acquired his academic education in Livingston High School and was graduated in 1910 from the Medical Department of Tulane University of Louisiana, New Orleans. In that same year he served the first internship in the old Sunset Hospital, now the Southern Pacific Hospital, Houston, and for the forty years since he had practiced in Houston. He founded the Feagin Clinic.

A member of the Texas Medical Association continuously since 1911 and a fellow of the American Medical Association through Harris County Medical Society, Dr. Feagin was a founder of the Postgraduate Medical Assembly of South Texas and a fellow of the American College of Surgeons. He specialized in industrial and traumatic surgery. For thirty years he had been a police and fire surgeon for the city of Houston and for more than twenty years the chief surgeon of the United Gas Corporation. He was a consulting surgeon at the Southern Pacific Hospital and a staff member in surgery at the other Houston hospitals. During World War I Dr. Feagin served as a lieutenant in the United States Navy; during World War II he was a selective service examiner for three years and received a presidential certificate of merit for work without compensation. He was a member of the Methodist Church, a thirty-second degree Mason, and a member of the Arabia Temple and Chi Zeta Chi medical fraternity.

In Houston in 1913, Dr. Feagin married Miss Anita Hardcastle, who survives. Other survivors are a son, James Hill Feagin, D.D.S., Houston, and Mrs. Grace Thorn, Wichita Falls; and a sister, Mrs. Z. L. Foreman, Livingston.

E. A. MOERS

Dr. Edwin A. Moers died August 2, 1951, at his home in Houston, Texas.

The son of W. A. and Mary Moers, Dr. Moers was born December 21, 1887, in Addicks. A graduate of the University of Texas in Austin, Dr. Moers received his medical education from the University of Texas School of Medicine in Galveston and Tulane University in New Orleans; he received his degree in medicine from the latter institution in 1924. After serving an internship at St. Joseph's Hospital in Houston, Dr. Moers remained in that city to practice.

A member of Harris County Medical Society, the Texas Medical Association, and the American Medical Association, Dr. Moers also was affiliated with the Association of American Physicians and Surgeons and the American Association of Railway Surgeons. He was on the staff of the Southern Pacific Hospital. Dr. Moers was a life member of the Fraternal Order of Eagles and a member of the Masonic Lodge, Knights Templar, and Shrine. He served in the Texas Defense Guard and was a member of the Methodist Church.

Dr. Moers married Miss Ola Mills in Groveton in 1913. Survivors include Mrs. Moers; two sons, Drs. A. E. and R. O. Moers, Houston; two brothers, R. J. Moers, Houston, and O. A. Moers, Nashville, Tenn.; and three sisters, Mrs. Minnie Neu and Mrs. A. L. Niebuhg, Brenham, and Mrs. Mary Haug, Houston.